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Telephony

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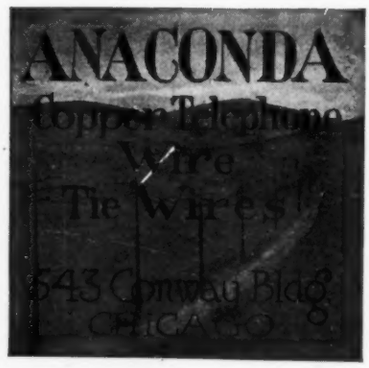

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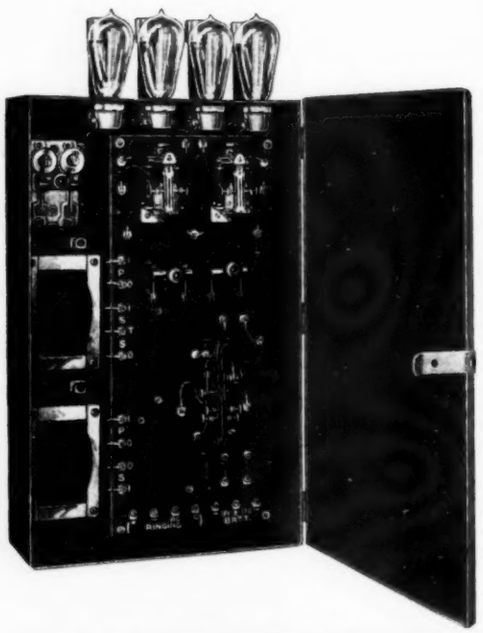

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CURRENT OPINIONS AND COMMENTS

Next week will be telephone week in Chicago where the United States Independent Telephone Association holds its annual convention beginning Tuesday and lasting four days. This year's meeting promises to be a most important one, for topics are waiting for discussion that have a vital bearing on the future of the industry.

Not the least interesting of the questions slated for settlement is the proposition originating in the recent Illinois convention with regard to the national association itself. If the debate goes to a finish, it will decide whether or not Bell companies shall be admitted to membership in the national organization, for that is the real issue embodied in the resolutions adopted by the Illinois association at Peoria three weeks ago, which will be submitted to the Chicago convention for action.

As President MacKinnon said at St. Paul: "If the time has arrived for a national telephone association, instead of an Independent national organization, then the time has arrived for a discussion of co-ordination of state and national associations."

* * * *

When the officers of the state telephone associations held their meeting at St. Paul in July, this proposition came up in a discussion as to the desirability of a closer co-operation between the national body and the various state organizations.

The feeling that there should be more extensive co-ordination between the state and national associations has existed a long time in some quarters. Of late years this idea has been recognized by the national association arranging for conferences with the state presidents and secretaries, which were held during the annual convention.

* * * *

At the St. Paul meeting the plan of making member companies of the state organizations members of the national association by some scheme of dividing the annual dues between the two was proposed. As quite a number of state associations contain Bell members, the question naturally arose there as to the advisability of transferring a percentage of such state dues to the support of a national Independent association.

This was a difficulty that checked any definite action at St. Paul, but the Illinois convention has revived the question and adopted resolutions that seek to solve the problem by changing the name of the national Independent association "so it shall more clearly indicate an association representing the entire industry."

The resolution also paves the way for the admission as members of Bell companies now affiliated with certain state telephone associations.

* * * *

The Illinois telephone men, in submitting this proposed change, have apparently given the mater considerable study, for their resolutions also provided for the election of national directors by state associations, an executive committee and directors-at-large by the national directors and for assessments to supply the necessary revenue.

Copies of the resolutions have been mailed to the officers of all state telephone organizations so they will be familiar with the details and be ready to discuss the proposition when they meet in Chicago.

The issue calls for careful consideration and doubtless will be the subject of full and open debate as it should be, for it is a matter for the convention to determine.

* * * *

The demand that there be closer co-ordination between the state associations and the national organization has existed for several years, although general conditions since 1917 seemed to make it advisable for the national body to concentrate its activities on national issues relating to Washington legislation, interstate commerce affairs and federal government matters, leaving state problems to the state associations.

The period of government control of wires, and the complications that resulted therefrom, concerned the national association, rather than the state bodies, but now the latter desire more participation in the national councils. This will probably be in accord with the ideas of the smaller companies that have felt they were getting too little benefit from the national association.

* * * *

No doubt exists that the directors of the association have always been willing

to help all the companies—large or small—in any way possible, and that they have proceeded on the theory that what was good for the larger concerns was good for the smaller ones. Furthermore, they will doubtless welcome any plan that will knit both together more closely and secure more co-operation between all elements in the field.

* * * *

The history of all organizations—particularly trade organizations—shows that the bulk of the work is usually done by a few men. This is equally true of most state telephone associations, as it is human nature for the rank and file to "let George do it."

Election of national directors by state associations is favored by some because it would democratize the national association. "Democracy" is a popular catchword to conjure with, but it doesn't always prove effective in getting things done. A greater, wider interest in the United States Independent Telephone Association, however, is most gratifying and can produce good results.

Closer affiliation between that organization and the state associations can be utilized to help all concerned. A discussion of the subject should prove illuminating and lead to a clearer understanding of the situation.

* * * *

Many other subjects important to all telephone men will also be given attention at the convention. Line protection from lightning, radio developments, and the relationship with connecting companies are some of the topics which will be handled for the instruction and entertainment of those in attendance.

When the weather man is in good humor, Chicago usually gets a fine brand of weather in October, and any telephone man who can possibly make the trip should plan to spend two or three days here next week. It will pay him to meet and mix with those in the same line of business. He will return home better equipped for his work.

* * * *

There is a good moral, or lesson, for all business organizations in the result of the world's series baseball games that were played in New York recently. On one side was a team of star players, brilliant performers in their respective roles having individual records of wonderful achievements throughout the season. Compared to them the other team looked mediocre. In fact, none of the expert "dopesters" gave it a chance to win against the aggregation of stars.

What happened? The stars didn't pull together, and the hard-working Giants—who looked more like pigmies, compared to their star opponents, before the games started—plugged along with effective, dove-tailed team work and won every game that went to a decision.

That shows what organization, cohesion and teamwork will do. The telephone company or any business concern that has star men at the heads of departments may be fortunate—but if they do not pull together for the success of the whole institution, there will be something important lacking.

Hard-working loyalty and a willingness to subordinate individual ambitions to the common good accomplish more than the spasmodic sparkling of star workers who are more interested in building up personal records. Teamwork counts in everything—business as well as baseball.

* * * *

What is the best piece of news the newspapers have printed lately? Of course, the fading away of the Turkish war clouds furnished a hopeful report, but one short paragraph hidden away in the railway news contained information most significant and optimistic. It said the Santa Fe road had placed orders for 5,150 new freight cars, delivery to begin January 1.

That means business is decidedly on the upgrade. Business cannot be healthy when the railroads have dull times. The demand for 2,000 refrigerator cars, 1,000 box cars, 1,000 automobile cars, 500 coal cars and 500 stock cars by one of the big rail lines is one of the most encouraging signs observed in the business sky for some time.

The news from the Dardanelles is good, but the news from the Santa Fe Trail is better.

"All Set" For National Convention

Program Completed for Meeting of the United States Independent Telephone Association in Chicago—More Exhibits Than Last Year—Varied Program With Morning Sessions Only—Pioneers Luncheon to Be Feature

Everything is in readiness for the annual convention of the United States Independent Telephone Association, to be held at Hotel Sherman, Chicago, October 24 to 27. The program has been completed, and all exhibit space allotted, so that when President F. B. MacKinnon "steps on the accelerator" at 2:30 p. m., October 24, the convention car will move rapidly. Except on the opening day, all sessions will be held in the mornings as shown on the program on the opposite page.

The first day will be devoted to a meeting of the board of directors, registration, inspection of exhibits, reports of officers, and miscellaneous business. In the evening an innovation will be tried out. A reception will be tendered to members and convention visitors by the board of directors and the exhibitors. This, it is expected, will develop into a sort of reunion and general get-acquainted gathering.

Wednesday morning there will be but three speakers—but each will be well worth hearing.

John B. Maling, of Chicago, in his address on "The Origin and Effect of Class and Freak Legislation," will pay special attention to what is known as "Americanization."

The presence of Vice-President E. K. Hall, of the American Telephone & Telegraph Co., at the convention is significant of the changed and changing conditions in the industry. Mr. Hall—the author of the so-called "Hall Memorandum," which was approved by the association's directors last June, will speak on the subject, "Bell-Independent Relationship." Everyone attending the convention will want to hear what he has to say upon this important matter.

"Wired Wireless" is a phrase which has become very familiar to telephone men in the past two or three years. Just what is meant by this phrase will be explained by Major J. O. Mauborgne, of the United States Signal Corps. Major Mauborgne has taken an active part in the work done by Major General George O. Squier and will talk upon some of the latest developments along this line, such as the use of electric wires as antenna and other phases of "wired wireless." His address is certain to be listened to most attentively by

PROGRAM FOR CONVENTION OF UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Tuesday, October 24, 10 A. M.

Meeting of board of directors, directors' room, mezzanine floor.
Registration of members and visitors,
Registration desk, convention floor.
Inspection of exhibits, convention floor.

Tuesday, 2:30 P. M.

General opening session, convention hall.
Report of President F. B. MacKinnon.
Report of Secretary-Treasurer Chas. C. Deering.
Appointment of convention committees.
Miscellaneous business.
Announcements.

Tuesday, 8:00 P. M.

Reception to members and visitors by the board of directors and exhibitors.

Wednesday, October 25, 10:00 A. M.

General session, convention hall.
Address: "Origin and Effect of Class and Freak Legislation," by John B. Maling, Chicago.
Address: "Bell—Independent Relationship," by E. K. Hall, New York City, Vice-President, American Telephone & Telegraph Co.
Address: "Wired Wireless," by Major J. O. Mauborgne, United States Signal Corps, Chicago.

Thursday, October 26, 10:00 A. M.

Conference on "Substation Protection."
"The Underwriters Viewpoint," by William S. Boyd, Electrical Inspector, the Western Insurance Union, Chicago.
"The Telephone Company's Viewpoint," by Prof. R. V. Achatz, Associate Professor of Telephone Engineering, Purdue University, Lafayette, Ind.
General Discussion.

Thursday, 1:30 P. M.

Luncheon and meeting of the Independent Pioneer Telephone Association of the United States—men and women.

Friday, October 27, 10:00 A. M.

Consideration of reports of committees.
Discussion of proposals to change name and character of the association.
Miscellaneous business.
Adjournment.

Friday, 1:30 P. M.

Luncheon conference of state association executives.

all telephone men at the annual meeting.

The Thursday morning session will be devoted to a discussion of "Substation Protection."

The viewpoint of the fire underwriters will be presented by William S. Boyd, of Chicago, electrical inspector of the Western Insurance Union. The telephone company's viewpoint will be set forth by R. V. Achatz, Lafayette, Indiana, associate professor of engineering, Purdue University. The presentation of these two viewpoints will be followed by a general discussion.

The entertainment committee of the Independent Pioneer Telephone Association has completed plans for the luncheon on Thursday, October 26. A special arrangement with the hotel management has been made which, the committee believe, will do away with any delay or crowding, that last year caused some slight criticism because of the great number attending—some 400 men being present.

While the attendance this year will be even larger—the ladies are invited—it is planned to carry out this luncheon and program with snap. There will be a variety of the most attractive music and a program of exceptional talent is being arranged for the sessions to follow the repast. Some interesting surprises are included in this part.

The program this year is more varied and, the committee believes, even better than before. The exhibitors are co-operating with the committee, as is the United States Independent Telephone Association, to make this session one of the features of the convention.

The concluding session on Friday morning will be devoted to a consideration of reports of committees and miscellaneous business. At this session will be considered the proposals to change the name and character of the association. In view of the resolutions adopted at the convention of the Illinois Telephone Association, October 5, there will be great interest centered in this session.

Friday, at 1:30 p. m., the annual luncheon conference of the state association executives will be held. This meeting has become a regular feature of the annual convention of the national association and undoubtedly this year there will be a full attendance of the officials of the various state associations.

As has been previously mentioned, all exhibit space has been taken and convention visitors will have opportunity to see all the latest in telephone appartus and allied equipment. Those exhibiting this year are:

Acme Card System Co., Chicago; Addressograph Co., Chicago; American Appraisal Co., Milwaukee, Wis.; American Electric Co., Chicago; Automatic Electric Co., Chicago; Bell Lumber Co., Minneapolis, Minn.; Lyton T. Block & Co., St. Louis, Mo.; Bowdle Accounting System, Cerro Gordo, Ill.; Brookins Mfg. Co., Dayton, Ohio.

Chance Co., Centralia, Mo.; Churchill Cabinet Co., Chicago; Coffey System & Audit Co., Indianapolis, Ind.; Cook Electric Co., Chicago; Electric Storage Battery Co., Philadelphia, Pa.; French Battery & Carbon Co., Madison, Wis.; Harrah Mfg. Co., Bloomfield, Ind.; P. W. Herbst, Chicago; Holtzer-Cabot Electric Co., Chicago.

Index Visible, Chicago; Kellogg Switchboard & Supply Co., Chicago; Leich Electric Co., Genoa, Ill.; McLeod Electric Supply Co., Chicago; Monarch Telephone Mfg. Co., Fort Dodge, Iowa; National Carbon Co., Cleveland, Ohio; Naugle Pole & Tie Co., Chicago; North Electric Mfg. Co., Galion, Ohio.

Page & Hill Co., Minneapolis, Minn.; Reliable Electric Co., Chicago; Runzel-Lenz Electric Mfg. Co., Chicago; Standard Underground Cable Co., Pittsburgh, Pa.; Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.; Templeton, Kenly Co., Chicago; Turner Brass Works, Sycamore, Ill.; Twin Dry Cell Battery Co., Cleveland, Ohio.

New Exchange Building for Fort Wayne, Ind.

Announcement has been made by officials of the Home Telephone & Telegraph Co., of Fort Wayne, Ind., that a new building will be erected at the southeast corner of Piqua and Wildwood avenues in the near future for housing the South exchange of the company. The building now used for this purpose will be abandoned when the new structure is completed.

The building will be 70 feet by 70 feet and will be modern in every respect. It is estimated that it will cost approximately $75,000.

Telephone company officials have not yet decided on the equipment of the building. It is possible, it has been announced, that the automatic system will be installed at the new exchange, eliminating the necessity of rest rooms and office rooms, as would be necessary with the present system.

Revision of Rules for Overhead Line Construction.

A sectional committee has been formed for the revision of Part 2 of the National Electrical Safety Code dealing with the rules for overhead line construction. This committee will conform to the rules of procedure of the American Engineering Standards Committee which has adopted the Electrical Safety Code as an American standard. The same committee will draw up standard specifications for crossings of overhead lines with other utilities.

A meeting of the sectional committee will be held early in November at the U. S. Bureau of Standards, Washington, D. C. The committee is a large one consisting of about 50 representatives of state utility commissions, utility associations, electrical workers, casualty insurance organizations and other interests concerned with the subject.

Anyone having suggestions for changes in the present edition of this part of the safety code should submit them at this time to the Bureau of Standards.

Start Work on New Buildings of Louisville, Ky., Company.

Announcement of a program for expansion of facilities calling for an expenditure of a $1,000,000 by the Louisville Home Telephone Co., of Louisville, Ky., has been made by Philip S. Pogue, president.

The work was inaugurated early this month when ground was broken for erection of a $200,000 branch at Second and Magnolia streets. Construction of an addition to the Shawnee exchange, costing $100,000, will also be commenced shortly. In addition there will be annexes to the Parkway branch and the Crescent Hill branch. Cost of the latter will bring the amount of new construction to be started within a month up to $400,000.

The total expenditures will reach the $1,000,000 mark by attendant costs for wiring and conduits.

The proposed structures will be completed within six months, Mr. Pogue said, adding that the capacity for service will be increased 50 per cent. General improvements of the company's properties will be extended over a period of two years.

The appearance of the Magnolia exchange will not be unlike that of a residence, and is to be built a distance back from the street. It is to be of colonial design—the exterior walls of red brick, laid with white mortar and trimmed with cut stones.

At the entrance of the building there will be a public lobby and telephone booth. On the first floor will be located the terminal room, containing the distributing racks, wire chief's desk and switchboard, etc. The second floor will contain the main operating room, a recreation room.

The building is designed for a present capacity of 4,000 lines and is arranged so that it can be extended to an ultimate capacity of 8,000 lines.

"Thank You," Says Montreal Central—Does Not Repeat Number.

The Bell Telephone Co. of Canada has ordered its operators at the uptown exchanges in Montreal to stop repeating the number called and say instead "Thank you."

Traffic has become so heavy that the time lost in repeating the number called means considerable delay, according to the company officials.

Measuring the Telephone Traffic Job

What the Traffic Job Really Is—Measurements to Be Applied as to Operating and Financial Results — Specific Instances — Paper Read at Jamestown Meeting of the Up-State Telephone Association of New York

By E. R. Stonaker

Superintendent of Traffic, Mountain Home Telephone Co., Plattsburgh, N. Y.

In the early days of the telephone business most of the companies were organized on a territorial basis—that is, with local, district and division managers in charge of all branches of the work in the different geographical divisions of the territory covered. Soon the necessity for the functional organization—that is one divided into the different departments of commercial, plant and traffic, with each department having its local, district and division representative in each of the different geographical divisions of the territory—became apparent.

The Traffic Man.

At about this time a general manager of one of the companies, which had recently adopted the functional plan, went to his traffic superintendent and got the following off his chest:

"Bill, could you use another man in your traffic engineering department?"

"Yes, I might," was the reply. "Why?"

"Well, I thought of turning Ed Smith over to you," says the G. M.

"What makes you think he'd make a traffic engineer?" quizzed the T. S.

"Well, we had him in the commercial awhile first, but he seemed to get the subscribers with whom he came in contact, all up in the air, so we transferred him to the auditor's force. There, he seemed to be more interested in the figures of the clerical force than in the figures on the subscribers' bills, so we turned him over to the plant people.

"He's connected the tip with the ring and the ring with the sleeve so many times and left so many loose and half-soldered connections around the plant that Geo. Williams, our plant superintendent, is rearing around and threatening to kill him. Now, this young fellow is the president's nephew, or something, and has got to be taken care of. We've tried him out as a commercial man, a plant man and in the auditor's office, and he doesn't seem to be suited to any of those jobs, so I've come to the conclusion that he must be a traffic engineer."

Now, that was the opinion held of the traffic man and his job in those days, and I regret to say that that same opinion still is harbored by some of us today. When they are told that this or that traffic man is coming into the room, some expect to see a cross between Harold Lloyd and Willie Westinghouse Edison Smith, a spectacled theorist talking nothing but traffic units and doing verbal stunts in a theoretical airplane way over the heads of the ordinary layman; others look for a dandified young thing, with his handkerchief in his sleeve and yellow spats peeking coyly from beneath his trouser legs.

They think a traffic engineer deals so much with traffic units that he finally becomes one himself and that a traffic manager's duties are those of a sissified guy who does the la-de-da act among the girls of the organization until he becomes like a girl himself.

Now, I'm here to say that the traffic job is, or should be made, a regular man's job; that it has a practical side as well as a theoretical side; and that its possibilities are fully as important as, if not more so, than those of any other department of the organization.

The Traffic Job.

In a paper on traffic management, which was presented at our meeting in New York last fall, I stated that the traffic department is responsible for furnishing a satisfactory grade of service to the company's patrons and for doing so in an efficient and economical manner.

Now, we are selling telephone service—not just telephones—to our patrons; therefore, the furnishing of that service, and of a satisfactory grade, becomes the primary responsibility of the company. With that responsibility the traffic department is charged and upon how fully it accepts it and how well it discharges the duties incident to it, depends to a great measure the success or failure of the company.

It is easy, and indeed is quite a common practice, for the operators, chief operators and the general traffic organization to blame poor service upon poor plant conditions; in other words, to pass the buck, shift the responsibility. I say that the traffic department, being responsible for service to the public, is as fully responsible for poor plant conditions as the plant department. I found such conditions existing in certain offices of the Mountain Home territory in the early days of our organization. I would discover a noisy toll line or some other poor plant condition and ask the chief operator about it.

"It's always been that way" might be the reply.

"Did you ever report it to the wire chief?"

"Oh, yes, lots of times, but he couldn't seem to fix it."

"Did you ever report it to me?"

"Oh, no, I wouldn't want to get the wire chief in wrong and get him sore at me by going over his head. I'd never get anything done."

That was a situation hard to cure. It seemed a perfectly logical situation from the viewpoint of both the chief operator and the wire chief, but by dint of much explaining and occasionally "jumping on" the responsible parties with both feet, they were made to see that this reporting of stubborn cases of trouble was done, not for any reasons of personal spite but for the good of the service and to help the wire chief, not to hinder him.

Now, a case of trouble never goes beyond the schedule time within which it is supposed to be cleared, which schedule is shown in our plant trouble routine, without its being reported to me by the chief operator. I immediately notify the plant superintendent and immediate action is taken to clear that trouble.

This is merely an instance to illustrate the fact which I am trying to stress, that the traffic department is responsible, not only for simply plugging up numbers and making connections, but for everything affecting the giving of service, even such things as seeing that subscribers' contract orders are made out by the commercial department to cover proper details, etc.

Methods of Measurement.

In the paper on traffic management referred to, a typical traffic organization was described for companies operating a property of 15,000 to 20,000 stations connected to 25 or 30 exchanges in widely separated towns and communities.

Now, it is possible to measure the results obtained by this traffic organization, or any other, for that matter. It is possible to weigh it in the balance and see whether it is found wanting.

Certain definite technical principles can be applied to the tests which are made and the records which are kept, and the kind

MUST SHARE SUCCESS.

The higher up in life that a man goes, the more necessary it becomes that he shall co-operate with other men. Any man's success depends largely upon the efforts of others, and anyone who is not willing to share his success with these others very seldom has much success to share.—Winthrop Mason.

of a job being done by the traffic department of a given organization can be pretty definitely determined. However, these principles have to be applied in a common sense manner. It is easily possible to run wild on them and make them an end rather than a means.

Measuring Quality of Service Rendered.

The primary job of the traffic department is the rendering of service. How are we going to measure that job? Simply by systematic tests and observations of the service and interviewing the subscribers. This is done by a properly qualified

Year.	1918	1919	1920	1921
Average original answering time, in seconds	3.5	3.4	3.5	3.4
Average recall answering time, in seconds	6.2	11.1	10.9	8.9
Average disconnect time, in seconds.	3.7	4.8	4.4	4.0
Per cent subscribers reporting service satisfactory	93.8	94.3	94.5	94.8
Per cent subscribers reporting service unsatisfactory	6.2	5.7	5.5	5.2

Table I. Results of Service Observations and Subscriber Interviews.

person assigned to the job of making these tests and interviews, the results being submitted on each such inspections to the department head and to the general manager.

During the last four years these observations and interviews in the territory of the Mountain Home company resulted as shown in Table I.

The results shown in these tables are based on from 600 to 1,000 observations and interviews throughout the territory. Because of the small size of our central offices—the largest operates 2,000 stations—it is impractical and uneconomical for us to install and use standard service-observing equipment. Therefore, the methods outlined here are the only ones available to us for obtaining a proper gauge of the quality of our service.

As many as possible of our tests and observations are made from the frame, without the knowledge of the operator. We are thus able to measure the grade of service by the figures shown in Table I and see that we are giving a 3.5-second average answering time service and that better than 90 per cent of our subscribers are satisfied with it.

We do not accept this as the only and final gauge of our service. We further analyze these tests and observations to show the percentage of calls with an answering time over three seconds, percentage over five seconds and percentage over ten seconds. We analyze the recall and disconnect time in the same manner and also show the percentage of calls affected by operators' errors and irregularities.

We also check against these observations the records of verbal and written complaints made by subscribers. An accurate count is kept of all complaints made and these are divided into the various reasons for complaining—and another gauge of our service is thus obtained. The complaint record for the Mountain Home company for the past four years is shown in Table II.

Using the Knowledge Obtained From Measuring Service Results.

These inspections and records of complaints indicate not only the state of the service in general but also when the service is below par, if anywhere. On one occasion the inspections and the complaint record indicated that service at a certain one of our offices was below par. It was an office where a new and inexperienced chief operator had recently been appointed. Our general traffic supervisor was sent in there and lived with the situation for a month or more.

She found that the new chief operator was not getting the best out of her force because she was not bringing the best girls on duty at the time when they'd do the most good—that is, she was not scheduling her force so as to get the most out of it. She would put a girl at a toll position who was more adapted to local work, and vice-versa. Further, she didn't know just how to handle the public when they complained—seemed to irritate them instead of satisfying them.

These things were simply due to inexperience and lack of training. The ability was there but it needed proper guidance. When the general traffic supervisor first went there, she made tests and interviews and obtained very poor results. After staying a month or so and giving the new girl a thorough training, she left the situation entirely and then went back again a month or so later and made tests and interviews and a thorough central office inspection.

The results obtained showed a great improvement and today that office is one of our banner offices. There is seldom a complaint made and everything indicates an excellent grade of service being rendered.

In another case where poor service was shown up by inspections and complaints, investigation showed that the chief operator was totally unfitted for her job. There was no discipline, the operators had no respect for her, and she had little interest in her job. The only remedy was a change of chief operators, which was immediately made with very good results.

And so, by these inspections and records, the traffic superintendent is able to keep a finger on the pulse of the situation, so to speak, and proper remedies can be applied at the necessary places when needed.

But the traffic department is not only responsible to the public for good service. It is also responsible to the general manager and, through him, to the directors of the company for obtaining sufficient revenue from that service—at least as far as toll or long distance traffic is concerned—and for giving that service so economically and efficiently that a fair margin of profit may be realized upon the money invested in it.

Measuring the Revenue Side.

How, then, may this financial side of the traffic department responsibilities be measured?

First, let us take the revenue side. Local revenue, except in some of the larger cities, is based on a rental charge to the subscriber for unlimited local service. The traffic department has very little control over or influence on this revenue, except possibly, insofar as the quality of local service given, controls the demand for that service.

Percentage of Toll Calls Completed.

With toll revenue, however, it is different. Here the percentage of calls offered

	1918			1919			1920			1921		
Year.	Written	Verbal	Total	Written	Verbal	Total	Written	Verbal	Total	Written	Verbal	Total
Total number of complaints per year	14	514	628	15	533	548	12	620	672	13	543	556
Average number of complaints per month	1.2	43	44.2	1.3	44	45.3	1	52	53	1.1	45	46.2
Average number of complaints per station per year	.001	.039	.04	.001	.04	.041	.001	.045	.046	.001	.036	.037
Average number of complaints per station per month	.0001	.003	.003	.0001	.003	.004	.0001	.004	.004	.0001	.003	.003
Approximate number of calls per year (from peg counts)	Total 24,687,696			Total 23,754,514			Total 24,328,354			Total 25,131,899		
Number of complaints per 1,000 calls		0.021			0.022			0.028			0.022	
Per cent of calls complained of		0.002			0.002			0.003			0.002	

Table II. Complaint Record of the Mountain Home Telephone Co. Covering Four Years of Operation.

by the public that are completed by the toll operating force, and the accuracy with which they are timed, greatly affects the amount of revenue derived from the toll business handled, as can be readily understood.

The percentage of toll calls completed is a very accurate gauge of the kind of a toll operating job that is being done by a given office or organization. The per-cent completed record of the Mountain Home company for the past three years and for the peak month of August this year is shown in Table III.

It will be noted that, while we have been increasing this percentage right along, we never dropped so far down as some of the companies did while suffering from war conditions, when they hit as low as 70 per cent and 75 per cent completed, and therefore we did not have so far to recover. It is a fact, however, that we had been completing well over 90 per cent up to 1919 and 1920.

When we began to get below 90 per cent, as we did in 1920, some of our offices even going as low as 81 or 82 per cent, we began to look around to see what was the matter, so that the proper remedy might be applied. In other words, our process of measurement showed that we were falling below the standard we had set for ourselves and it was time to bring ourselves back on the right track. Accordingly, we found from the analysis of lost calls, which we make each month, that over 70 per cent of the total calls lost was due to either "Don't Answer" reported for the called telephone, or the report that the called subscriber was out.

We then found that many of our toll operators were reporting "Don't Answer" too soon on toll calls and not properly following them up, with the idea of reaching the number later and completing the connection. We also discovered that if, when the called party was reported out. we found out who it was at the called telephone, giving this report, and offered that person to the calling party, very often they would accept him and the call would be completed.

Remedying the neglect toward "Don't Answer" and putting into practice the offering of the answering party, at once resulted in immediate improvement in our percentage completed and it has been climbing ever since, as shown by the increase from 87.9 per cent completed in August, 1920, to 91.2 per cent in August, 1922—3.3 per cent more—which means quite a piece of money when it is remembered that our toll revenue last year was $242,680. For one month in 1921, after we had started our drive on percentage completed, although there were some 500 less calls filed than in the corresponding month of 1920, there were 1,000 more calls completed.

Now, these records of percentage completed of toll calls are made at the central offices and the competitive list showing the standing of each office based on the percentage completed which we send out every month, stimulates the operators to complete as many calls as possible and thus beat the other office. In order to get the full value out of this stimulation, we post each morning at the toll positions

Year.	Per cent completed
1919	91.1
1920	89.7
1921	90.2
August, 1922	91.2

Table III. Percentage of Toll Calls Completed.

and on the bulletin board a statement showing the calls filed and percentage completed the previous day, for the current month to date and for the total previous month.

If this is too severely stressed, however, there might be a tendency for a chief operator to falsify this record in order to get a good standing. Generally a showing better than 95 per cent completed consistently indicates a nigger in the woodpile, although not always. At any rate, such a showing demands investigation.

On one occasion, when one of our offices was making a showing too good to be true, I walked into the office one day, checked up the number of canceled tickets which were filed away with the number which had been reported and found they checked O. K. Not satisfied, I looked around a little farther and, sure enough, in the back of one of the desk drawers I found another bundle of canceled tickets.

These I showed to the chief operator and she 'fessed up that she went out to badly beat the rest of the offices and that's the way she was doing it. Well. from what I knew and judged of that girl, I felt sure that she was not deliberately or basically dishonest in her actions; she had simply been hounded so on "per cent completed" that she did a dishonest thing, fully conscious of the error of her way, too.

Another girl doing the same sort of thing under different circumstances, I'd probably have turned out of the office, but my judgment of this particular girl was vindicated in every way. I made of her not only a cracker-jack chief operator but one whom I consider a personal friend, as well.

This falsifying of the percentage completed has to be closely watched, however, especially now, since many of the calls which are counted as lost bear report charges and a girl, if sufficiently hounded, might even go so far as to fail to send in report charge tickets in order to boost her "per cent completed" and thus deprive the company of enough revenue to more than offset the few additional calls she might complete due to that hounding.

The accuracy of timing toll calls is measured by tests made on the toll forces from time to time, the results being properly taken up with the chief operator and by her with her force. We also have another method of measurement of this important feature of the service. On two days of the month—what two days it will be no chief operator knows—we call each chief operator and tell her to send in a report of the total number of completed toll calls she had for those two days and the number that showed excess minutes, divided into the three-minute initial period tickets and the five-minute initial period tickets.

The offices are then rated on the basis of the percentage of total completed tickets that show excess minutes, and a list of the offices so rated on a competitive basis is sent out to all offices. Here again each one gets busy to try to beat the other fellow.

Calculagraphs must be kept in order and not allowed to stay out of adjustment, or all gummed up with ink or with old ribbons in them for days at a time. Calculagraphs on standards should be done away with and put in the keyshelves wherever possible as the arrangement on a standard is productive of crookedly and illegibly stamped tickets which cannot be read and, therefore, the full time is not charged.

Revenue Obtained from Inter-Changed Business.

Our company within the past year or two took over the Ticonderoga Home Telephone Co., operating exchanges at Ticonderoga and Schroon Lake, and the Port Henry Telephone Co. operating exchanges at Port Henry and Mineville. These companies connected with surrounding locally-owned companies in nearby places.

In such cases all that existed was a verbal agreement that each company would take 100 per cent of its originating business. Somebody was losing out on that basis. A study since made on a standard basis shows that on the business interchanged with one of these locally-owned companies, it is entitled to more than that 100 per cent, whereas on that interchanged with the other locally-owned company we, when the proper readjustment of plant used is made, are entitled to more than the 100 per cent.

This is being adjusted and, of course, considerably affects the revenue of the various companies concerned. For years the one company had been losing money rightfully belonging to it, and so had the Ticonderoga and Port Henry companies in the other case.

It was further found that a locally-owned line between Port Henry and another nearby point had been in service for years. The company at that nearby point had a line connecting with a company at a somewhat distant point, which competed with us, and was making connections to Port Henry subscribers at a rate less than the regular standard rate

which we charged our subscribers at that distant point for calls to Port Henry.

Thus, our subscribers, by patronizing the competing company at the distant point were able to get a cheaper rate to subscribers of the Port Henry company, with which we had a traffic agreement. These things would have been discovered before if a proper traffic organization had existed in the companies we took over—and they meant real money, too.

Total office units per employe hour day..	155	128
Grand total cost per 1,000 units	$2.20	$4.30
Cost per employe, hour	$0.271	$0.475

Table IV. Comparison of Traffic Costs of Two Imaginary Offices.

At a recent traffic inspection made in the territory of another small company it was found that it was switching considerable toll business, day in and day out, and had been for years, without receiving a cent for the labor involved and the plant used. Those are things in which proper traffic supervision means real money.

Use of Toll Plant.

The correct routing of toll traffic also affects toll revenue because of the fact that incorrectly routed toll traffic often means, not only delayed service but also poor transmission, and subscribers will not use a toll service on which they can not get prompt and clear connections. This incorrect routing and the failure to notify the distant office when through with a toll line is the most flagrant error committed by the smaller toll offices throughout the state. It results in tying up toll plant that costs thousands of dollars and wasting operators' time, which also costs money, almost inconceivably.

It is possible to gauge the measure of efficiency with which toll operators are using the toll plant by making observations as to how strictly the instructions on routing calls and clearing circuits, which instructions are furnished every toll office, are being followed.

Measuring the Cost Side.

So far we have dealt with the revenue-producing side of the traffic organization and how it is possible to measure it. There is another side of the ledger, and that is the cost side. Here it is possible to apply a very accurate method of measurement.

Inaccuracy of Measuring by Cost Per Station or Cost Per 1,000 Calls.

In the early days the traffic cost per 1,000 calls was used to compare the efficiency of given traffic organizations, but it was very evident that it took more labor and, therefore, cost more money to handle a call at a magneto board than one at a common battery board; more to handle a call from a coin box, where the operator had to collect the money, than one from a subscriber's line; more to handle a toll call than a local call, etc.

The traffic cost per station was also tried as a method of measurement, but here again, if the subscribers of one company made a great many toll calls—which, of course, are expensive to handle—and the subscribers of another made comparatively few, the traffic cost per station of Company A is bound to be more than that of Company B, even though it might be more efficiently organized.

Measuring Cost and Efficiency by Means of the Traffic Unit.

And so a method was devised by which a value was given each kind of call handled, based on the amount of labor involved in handling that call. A sort of rate of exchange was established, only this rate does not fluctuate and the standard is not the dollar but is one local call from a flat rate subscriber's common battery line completed in the local multiple—that is, without the use of trunks to any other switchboard.

Thousands of observations showed how long a time it took the average experienced operator to handle such a call, and that time was called the traffic unit. Further observations showed how long it took to handle coin box calls, rural calls, toll calls of various kinds, etc., and thus various values, based on this traffic unit, for each of these other kinds of call were worked out.

The local flat rate common battery call completed in the local multiple, which as I said is the traffic unit, is given a value of one, certain toll calls are given a value of 7.5, other classes of calls a value of 2.3, etc., all depending on the amount of labor involved in completing them.

Records of cost and efficiency made up on this unit basis are proof against any alibi. It is not possible for the traffic man to say, "Oh, my cost per station is more than so-and-so's because I have a lot more toll calls to handle," or "My cost per 1,000 calls is more than what's-his-name's because we have a lot of switching to do."

With everything equated to the standard unit, the number of such units that a given operating force can handle and give good service is the absolute measurement of the efficiency of that operating force, and the amount it costs to handle 1,000 such units is the absolute measurement of the economy with which the force is organized, whether that organization be in Jamestown, N. Y., Chicago, Ill., or Kalamazoo, Mich.

We in the Mountain Home company have evolved a simplified form of keeping the peg counts, equating the traffic and determining the costs, which is based upon standard instructions, and the results obtained thereby are in every way comparable with those obtained by applying those instructions without any modifications.

We keep a peg count in our larger offices once a month, in our smaller offices three times a year, and in our agency offices once a year. We compile a summary of the peg counts every month and a traffic cost and efficiency statement every month.

Peg Counts and Their Use.

Our peg counts are so compiled that I always know just how many operators are needed at each office each month, and can reduce or add to the force as occasion requires. I also use these peg counts to determine just where and when additional equipment is needed and how much.

Traffic Cost and Efficiency Statements and Their Use.

Our traffic cost and efficiency statement keeps my finger absolutely on the pulse of my organization. An instance of what can be accomplished by this measuring of the traffic job is shown in the case of Ticonderoga, which, as I previously stated, was taken over by the Mountain Home company the early part of last year.

The June, 1921, traffic cost statement, which is the first one we compiled for Ticonderoga, and before we had a chance to apply our methods, shows that it was costing them $499.11 per month, traffic expenses, to run the office; that each traffic employe was handling only 93.4 traffic units per hour throughout the day; and that it was costing $2.97 to handle 1,000 traffic units. They handled 168,000 traffic units during the month of June, 1921.

In spite of the fact that the traffic in June, 1922, had increased to 196,000 traffic units, or about 17 per cent, and that an increased salary schedule had been put into effect in the meantime, it cost only $451.77 or about 10 per cent less to handle that increased traffic, due to the fact that the peg counts showed that only seven operators instead of nine were needed to handle this traffic. Consequently each traffic employe was handling 133.4 traffic units each hour in June, 1922, which was an increase of 40 units or about 43 per cent, and it was costing only $2.31 to handle 1,000 units, a decrease of 66 cents or about 22 per cent.

Item.	Total per territory
Total office units per employe, hour-day	159.5
Cost per 1,000 units—	
Traffic supervision	$0.09
Operators' wages	1.80
Total controlled	1.99
Grand total	2.22
Cost per 1,000 calls.....	4.37
Cost per station, wages.....	0.59
Cost per employe hour.....	0.266

Table V. Traffic Cost and Efficiency Statement for Month of June, 1922.

In order to see just what the value of properly applied traffic supervision might mean to us, assume that we compared the traffic costs of one of our offices, which

had been in the organization since its inception, with those of one recently taken over which had not had the benefit of traffic supervision and found the results shown in Table IV.

It will be noted that the grand total cost per 1,000 units at "New Office" was about 95 per cent greater than at "Old Office." If this difference were due entirely to a wage factor, the same percentage difference should exist between the cost-per-employe hour at the two offices.

However, this item is but 73 per cent higher at "New Office" than at "Old Office," or a difference of 22 per cent less than the 95 per cent difference in the grand total cost item. Further study reveals the fact that the total office units-per-employe hour-day, 155, handled by "Old Office" are just 21 per cent higher than the 128 handled by "New Office." It is evident, therefore, that "New Office" is not organized at the same efficiency as "Old Office" by 20 per cent.

This is purely a hypothetical case to illustrate how these statements may be used as a measure of the efficiency and economy of a given organization.

Table V shows the traffic cost and efficiency statement of the Mountain Home company's territory as a whole for the month of June, 1922.

With these examples before you, I'd like to ask you whether or not properly applied traffic engineering and supervision is worth the money it costs, and whether or not it pays to be able to accurately measure the traffic job.

Florida Company Increases Capital from One to Five Million.

The stockholders of the Peninsular Telephone Co., of Tampa, Fla., at a meeting held a few weeks ago, voted to increase the capital stock from $1,000,000 to $5,000,000, in order to provide for an expansion and development program which, according to a statement by President W. G. Brorein, will care for the company's growth for several years.

Mr. Brorein declared that the increase in capitalization has been made necessary by the Peninsular company's rapidly developing business. The stock will not all be issued at this time, but he anticipates that a preferred issue will be placed on the market at an early date.

The Peninsular company has 150 stockholders. The meeting was attended by stockholders owning a substantial majority of the stock.

Grain Men in Sioux City, Iowa, Protest Rate Increase.

Members of the Sioux City, Iowa, grain exchange have arisen in theoretical arms against the charges of the Sioux City Telephone Co. for long distance messages, particularly to the South Dakota and Nebraska stations. Opposition is also expressed to the increase of $1 a month for the rental of business telephones.

Reduction in the long distance charges is especially desired by the grain exchange firms, who say their bills are increasing and range from $125 to $300 monthly.

Charges for business telephones will be advanced from $5 to $6 a month beginning November 1, according to a statement issued by James A. Rae, president and general manager of the Sioux City Telephone Co.

In justification of the rate boost the company declares that a loss was suffered during 1921 and that during the first eight months of 1922 a return of less than 1 per cent was obtained. The increased rate will add $28,000 a year to the company's revenue, it was estimated.

The statement calls the attention of the company's patrons to the fact that this is only the second change of rates in 16 years. The last increase was in 1918, when the residence rate was raised from $2 to $2.50 and the business rate from $4 to $5. It also gives a comparison with other cities of approximately the same population, showing that they have higher rates. The contemplated improvements, together with the approximate cost of each, are listed in the statement.

Manteca Company in California Grows Fast.

The Manteca (Calif.) Chamber of Commerce is distributing an interesting booklet descriptive of that hustling little city, and has the following to say of the local telephone company:

"The Manteca Telephone & Telegraph Co., a sub-licensee of the Pacific Telephone & Telegraph Co., furnishes the local and long distance telephone service in the city of Manteca and the surrounding territory. Three and a half years ago this company had a list of 220 subscribers, and today it serves 530 subscribers, showing the rapid growth of the territory. The suburban districts are served by 21 lines."

The owner of the Manteca company is C. W. Forbes, formerly of Chicago, who is well known among pioneer Independent telephone men.

Ohio-Michigan Association Wants More Operators' Conferences.

The Northwestern Ohio & Southern Michigan Telephone Association held a two-day operators' conference at Wauseon, Ohio, in the public library, October 11 and 12. The conference was conducted by W. S. Vivian, of Chicago. Although the first day was rainy, there was a large attendance.

F. L. McKinney, secretary of Ohio, Indiana Telephone Association, was present and spoke briefly of the good accomplished at these meetings. Miss Emily Lathrop, chief operator at Swanton, presented a paper on "Operators' Problems and Qualifications." Miss Irene Walker, instructress from the Toledo office of the Ohio Bell, gave an instructive talk on "Toll Operating."

During the meeting F. J. Spencer, president of the association, announced that he had just received a $100 reward, to be given his operators at Wauseon for services rendered in aiding in the capture of the bandits in that territory recently.

At the close of the meeting a vote of thanks was given Mr. Vivian, and all expressed a desire for similar meetings in the future.

The Incorporation of Telephone Properties.

"There are some advantages to be derived from incorporating your telephone properties," declares a recent bulletin of the Texas Independent Telephone Association. "Under a partnership or individual ownership, the partners or the owners are liable for debts or judgments to the full extent of his or their wealth.

"In other words, suppose an individual had a telephone plant worth $10,000 and a farm worth $10,000, on which he did not live and could not claim as a homestead, and that he should have a damage suit in which the party suing would get judgment for say, $20,000. The telephone property and the farm and any other property or money, not exempt, would be subject to foreclosure to satisfy the judgment.

If the telephone property was incorporated, the real estate or personal property of the individual stockholders would not be liable. All they could lose would be the amount of the stock they own.

In case of an incorporated company, a stockholder is liable only for the amount of his stock, but in the case of an individual ownership or partnership, the owners or partners are liable to everything they have that is not exempt by law."

Vail Medals to Employes for Aid During Pueblo, Colo., Flood.

In recognition of faithful service in remaining at their posts and rendering aid to many persons during the night of June 3, 1921, when the Arkansas river flooded Pueblo, Colo., and the telephone exchange, 13 employes of the Mountain States Telephone & Telegraph Co. have been awarded the Theodore N. Vail memorial medals.

Those to whom medals were given are: B. E. Thady, night testboard man; Mrs. Josephine Pryor, chief operator; Miss Julia Moynihan, assistant chief operator; Mrs. Margaret Williams, all night operator; Miss Matilda Anderson, local supervisor; Miss Georgia Armstrong, information operator; Miss Julia Swanson, long-distance operator; Miss Ethel Richards, local operator; R. D. Atterbery, repair man; A. W. Young, Colorado plant superintendent, Denver; J. F. Elliott, construction superintendent, Denver.

How Commercial Plans for the Future

In Preparing Its Part of Provisional Estimate Commercial Department Must Determine What Coming Years Will Bring — Basis for Estimates and Effect of Business Conditions — Published by Courtesy of The Northwestern Bell

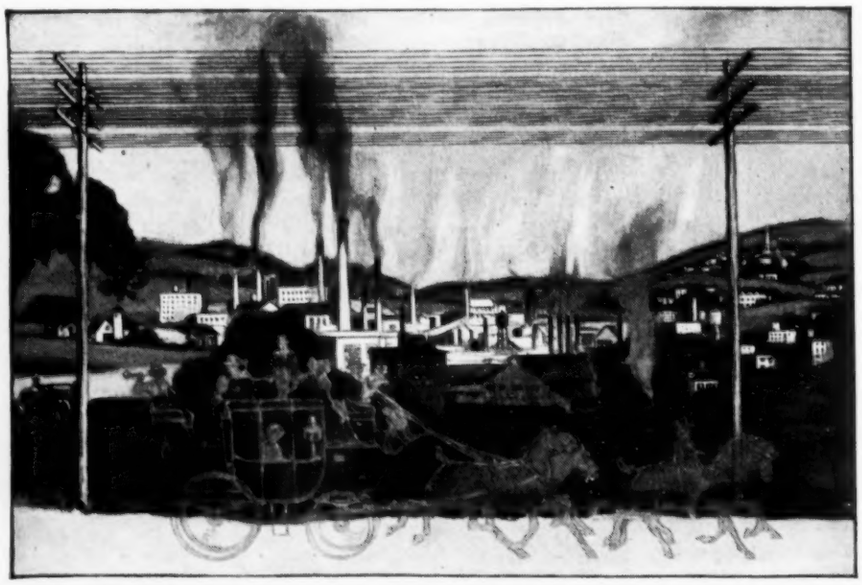
By Marion J. Stooker

Commercial Survey Engineer, Northwestern Bell Telephone Co.

Our company is now furnishing service to more than 500,000 telephones connected to central offices in 463 cities and towns in the five states of Iowa, Minnesota, Nebraska, North and South Dakota.

How many additional telephones will be connected to the central offices in these cities and towns during each of the next five years to provide service, and how many will be disconnected? Which of these towns and cities will grow to such an extent as to require larger and better telephone systems and will there be, through the growth and development of the country, other towns which will require telephone systems or connections with our long distance lines?

How much money will our company receive from our subscribers each year for local service, and how much for long distance service? How much money will be required to carry on the work of the commercial department each year for the next five years?



In the Days of the Stage Coach the Telephone Had Not Been Dreamed of. What Will the Future Bring? The Provisional Estimate Makes It Possible to Formulate Plans for Telephone Service Far in Advance of Conditions and Developments Yet to Come.

The answering of these and many similar questions constitutes the commercial department's responsibility in preparing a provisional estimate. The answer to these questions forms, to a large extent, the basis upon which a large amount of money will be spent each year towards the extension and improvement of our service.

Now what does the commercial man take into consideration in preparing the estimates which form the answers to these questions? While it is necessary to study specific conditions that exist in each city and district of the territory, there are certain things which must be given general consideration. These things are: First, anticipated business conditions; second, past experience; third, capacity for further development.

In forecasting general business conditions, it is necessary, first of all, to obtain some picture of the business conditions that are anticipated for the country as a whole, because it is not likely that business conditions in any large section of the country will long be materially different from those for the country as a whole.

Curves showing the trend of general business conditions for some years past are prepared from time to time by the American Telephone & Telegraph Co., and for the country as a whole a projection is made of the curve showing the trend of general business conditions estimated for the next few years. It then becomes necessary for the commercial man to obtain information to indicate whether conditions in his territory will follow, or in what way they will differ from, the trend indicated for the country as a whole.

Agriculture forms the basic industry in this territory, but there is also considerable mining, such as iron ore in Minnesota, coal in Iowa and North Dakota, and gold in the Black Hills region of South Dakota, and some manufacturing in our larger cities. All of these industries are affected by general business conditions of the country.

It is the practice for the commercial man to interview prominent men engaged in these various industries in his locality as well as bankers and other business men, and obtain their opinions regarding price trends, industrial wages, interest rates, ease with which credit may be procured, and other factors which will affect underlying business conditions as well as the anticipated conditions in their own business. It is necessary to review, compare and analyze the information procured and from it obtain a general view of business conditions for the various portions of the territory as seen by men engaged in other lines of business.

The commercial man is also constantly obtaining information which tends to show the general trend of business conditions as indicated by the changes in wholesale and retail business, manufacturing output, unemployment, new buildings and similar things.

By combining the information obtained from men engaged in other lines of work, and his own opinion regarding general business conditions as obtained from various sources, the commercial man forecasts the general trend of business conditions which, it seems probable, will be obtained during each year for which estimates are to be made. This forms a basis for his estimates.

However, business conditions alone, important as they are, do not give an adequate basis for estimating the number of additional telephones which will be connected to our system, nor how much we will receive from the public for the service we render. It is also necessary to know what has been done during the past.

For this purpose, records have been carefully set up and maintained, showing for each month and for each year how many telephones we have added to our

system, how many have been removed, how much money there was received for our services, and how much it cost to carry on the commercial end of the work. The information contained in these records makes it possible to determine to a large extent what effect various conditions have had upon our business.

The third factor which must be given consideration in making the commercial estimates is the capacity for further development. For some years past, the number of telephones for each 100 population has increased rapidly, due to the growing realization of the importance of the telephone in the economic and social life of the community.

While there is still considerable question as to what the ultimate number of telephones for each 100 population will be, it is nevertheless evident that it cannot always continue to increase as in the past. For example, in a city in which there has been a rapid growth in telephones but which has increased very little in population, it is found that nearly every business institution and 75 per cent of the families now have telephone service. It is obvious that when such a condition is reached, the number of telephones will not increase materially excepting as the population increases and new business firms come into the city or existing firms become larger.

There has likewise been a large increase in the demand for our long distance service, due largely to improvements in the service and the increasing recognition of its value. It is necessary, therefore, to forecast both the probable increase in long distance service, due to increased recognition of its value, and the growth in the number of subscribers.

It is a function of the commercial department to estimate the demand for service, and it is in estimating this demand that the factors of business conditions, past growth and capacity for further development form an important service. It is obvious that during "good times" when many new homes are being built and when business is expanding, there will be a much greater demand for telephone service than at a time when there is scarcely any building activity and when business is not expanding.

Records of past growth are used for determining, by means of comparison with other periods, what growth may be expected. In this connection, however, it is necessary to take into consideration changes in conditions, the change there has been in the number of telephones for each 100 population and what the possibilities are of further increasing the development, as well as the growth due to increase in population.

Telephone Growth Estimated.

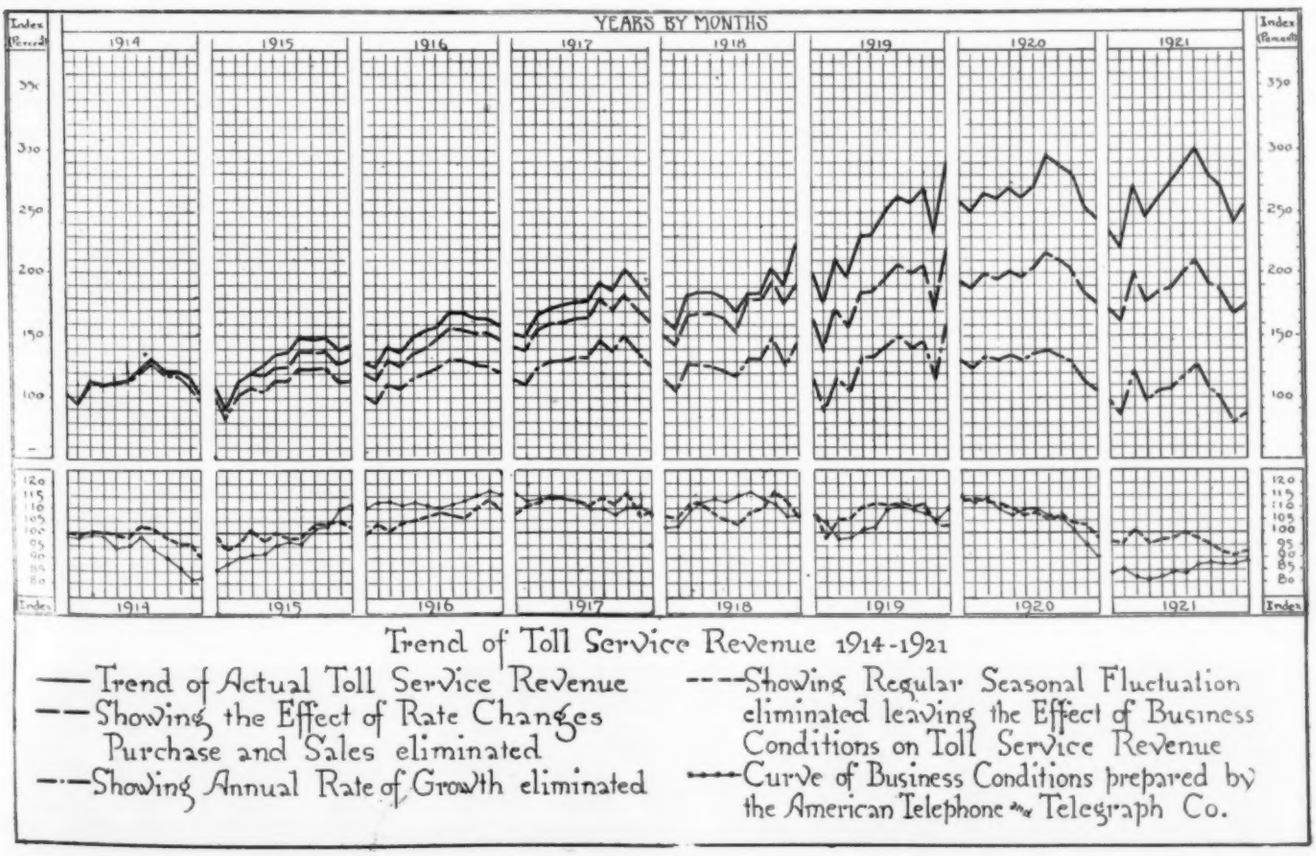
In order to estimate the number of telephones that will be gained each year in a city or town, it is necessary for the local commercial man to estimate the probable increase in population, the effect the anticipated business conditions will have upon the growth in telephones and also to determine in what way the growth during the past will affect the future growth, taking into consideration the development attained and the possibilities of further development.

Special conditions which may exist in the city or town also must be reviewed to determine if possible what effect they will have upon the growth in telephones, and consideration given as to what change, if any, there will be in the distribution between the various classes of service.

Having given consideration to all these factors the commercial man prepares his estimate for each year. Later the estimates are totaled for the different operating divisions of the territory, and the total for the company is obtained and compared with the increase in telephones for the company for other years.

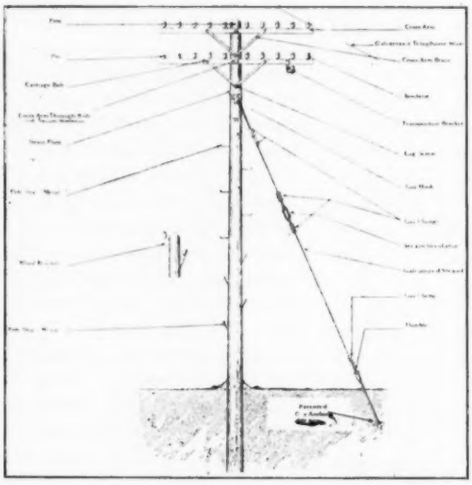
The average net gain for the past five years for our company as a whole, not including the gain or loss in stations due to the purchase or sale of exchanges, has been about 15,300, and it is estimated that the gain during 1922 will be approximately 14,000 stations. Included in the average gain for the past five years was a loss of approximately 4,000 in 1918, and a gain of about 32,000 in 1920.

Besides estimating the prospective growth in the number of telephones, the


YEARS BY MONTHS
1914
1915
1916
1917
1918
1919
1920
1921
Trend of Toll Service Revenue 1914-1921
——Trend of Actual Toll Service Revenue
– –Showing the Effect of Rate Changes Purchase and Sales eliminated
–·–Showing Annual Rate of Growth eliminated
– – –Showing Regular Seasonal Fluctuation eliminated leaving the Effect of Business Conditions on Toll Service Revenue
·····Curve of Business Conditions prepared by the American Telephone & Telegraph Co.

Curves Indicating the Trend of Telephone and Business Conditions for Some Years Past Aid the Commercial Department in Forecasting Conditions as They Will Probably Be For Some Time in the Future.

Everything to Build and Maintain Li



Everything from the Bottom of the Hole to the Top of the Pole.

Knowing the emergencies that descend upon telephone companies, our 48 houses are manned and equipped to act as Emergency Specialists.

They can provide quickly, standard materials of every type used to construct and maintain outside telephone plants, materials all of proven quality, materials all of the

Quality Tools from Earth Boring Machines and Auto Pole Derricks to the smallest hand tool carried in the Tool Bag.

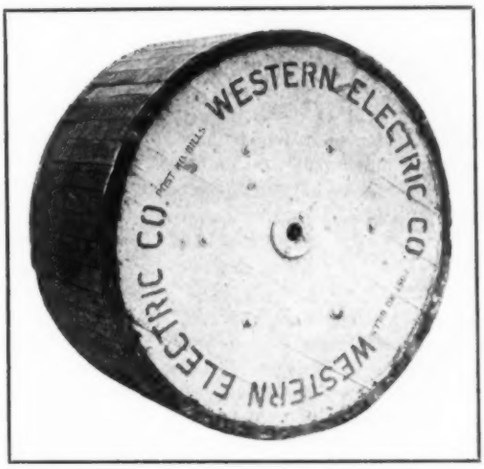
Western

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

Lines For A Generation of Service

types and quality used on lines built for a generation's service.

These houses are in the principal cities where manifold transportation facilities work with location to bring everything needed in emergency practically to the job where it is needed.



Every kind of conductor from Bare and Weatherproof Wire to Lead Covered Cable.

Western Electric Company
Offices in All Principal Cities

And Blue Bell Batteries designed by Telephone Engineers to assure Long Shelf Life and Rapid Recuperation

Electric

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

total number of telephones that will be connected and disconnected during each year is also estimated. The difference between the total number connected and the total number disconnected represents the growth or loss in telephones.

Because of the large amount of expense involved in disconnecting and connecting service it is necessary to consider very carefully all the factors which will have an effect upon the number of telephones disconnected and connected. Each year from 19 to 20 per cent of our company's telephones are disconnected, which, based on the present number of telephones, means that 90,000 will be disconnected during the year 1922 and, in order to have a net growth of 14,000 telephones, will require that 104,000 telephones be connected.

The number of telephones connected has varied considerably from year to year. The average number of connects for the past five years has been 113,000 per year, the number ranging from 100,000 in 1918 to 124,000 in 1920.

In addition to estimating the number of connects and disconnects it is necessary also to estimate for each year the number of subscribers who will wish their service moved from one location to another in the same town. The total number of such moves at the present time is approximately 40,000 each year.

As in the case of estimating the growth in telephones, it is necessary in estimating the number of telephones to be connected, disconnected, and the number of subscribers who will have their service moved from one location to another, to give careful consideration to records of past performance, conditions which have affected the figures for the past, and how they will be affected by future business conditions.

"Hard Times" and Disconnects.

Some one may ask, "How do business conditions affect the number of disconnects, connects and moves from one location to another?"

During "hard times," when there is a great deal of unemployment and when business is not constantly changing and expanding, people who have employment do not move about from town to town as much as when work is plentiful. Also the number of new business places starting up, discontinuing or moving to another town is not as large, and consequently there is a decrease in the number of connects and disconnects.

Similarly during "hard times" there is little building of new homes and apartments, and it becomes more difficult to find a new place to live. As a result there is less moving about from one place to another in the same town. Then, when business conditions improve and there is plenty of employment and business again expands, the number of connects, disconnects and moves of telephone from one location to another again tends to increase.

Another thing the commercial man must determine is when extensions and improvements in the service will be necessary. There are some parts of the territory where the telephone service now furnished is adequate to meet all the needs of the community, but will be entirely inadequate in a few years.

A community or town may now be served by means of a farm line or by lines from an exchange in a nearby town, with several telephones on each line. As such a community grows it will require more and better telephone service, which will either mean the construction of additional lines or the building of a telephone exchange in the town.

It may be that a community has an exchange, but there is no long distance service to nearby towns and the growth of the town makes it necessary that such service be furnished; or a town is growing rapidly and in order to properly meet the demands of the public it is necessary that a different type of service be furnished.

It is a part of the commercial man's job to keep informed regarding all such locations, to watch the growth and change in conditions, so that at the proper time provision will be made for extending our service.

Two Classes of Revenues.

Of a great deal of importance in connection with the finances of our company is the commercial department's estimate of the amount of money to be received for our services for administration purposes. Our revenues are divided into two classes. They are: "Exchange Service Revenue" and "Toll Service Revenue."

About 95 per cent of our exchange service revenue is received from subscribers in payment of their regular bills for local telephone service, while approximately the same proportion of our toll service revenue is composed of the charges for long distance calls.

Minor additional revenues are received from such sources as charges for installing and connecting subscribers' telephones, receipts at pay stations for local calls, telegraph service furnished over our toll lines and rental of various properties.

An estimate of exchange revenue is largely a matter of determining the existing average revenue per telephone and, after adjustments are made for anticipated changes in rates and distribution of telephones according to rates, applying that average to the estimated average number of telephones for the period under consideration.

An estimate of toll revenue, however, presents a much more complex problem. Constantly fluctuating and highly sensitive to general business conditions, of which it is somewhat a measure, it is still subject to certain rather definite seasonal and long term trends, upon which we may lose our estimate with a considerable degree of accuracy. Determination of the nature of these trends necessarily revolves into a study of past experience.

An actual measure of this experience is complicated by changes in the extent of our company's operation and revisions of rate schedules. Reliable records, permitting elimination of the effect of these changes are, however, available for the past ten years, and there has been determined as a result a toll revenue figure for each of these years which is on a comparable basis with any of the other years. With these figures as a basis, the past average annual growth in toll business has been computed as approximately 8 per cent.

In estimating the rate of growth each year for a future period, this past average must be considered in the light of anticipated conditions affecting not only business in general, but toll business in particular. Increased toll usage, for exexample, resulting from a recognition by the public of the value of the service, can only continue until this value is fully appreciated. It is necessary to estimate our present status in this regard and determine the prospects of continuing the rate of growth experienced in the past.

It is essential that consideration be given also to the effect of our rate structure on toll business offered, for it must be assumed that rates out of proportion to commodity prices in general will result either in stimulation or throttling of toll business. Further, attention is given to the factors tending to increase or decrease the amount of money received from the average long distance message.

Due to the improvements in the service and a better knowledge by the public of its possibilities, there has been an increase in the number of messages to points much farther away, which has tended to increase the average revenue per message. On the other hand, the lower charges for calls in cases where the calling party does not designate a particular person has resulted in an increasing use of this class of service and tended to lower somewhat the average revenue per message.

With such influences in mind, the percentage growth by years for the period considered is determined and our toll estimate prepared.

The commercial department is responsible for conducting the company's busines with the public and must provide public offices that are convenient to the public, and a personnel that can render prompt and courteous action to its patrons in connection with the establishment of service, collection of accounts, adjustment of complaints and many other services. The cost of properly performing all these services is of considerable importance in connection with the finances of our company and requires careful consideration.

In estimating this cost, it is necessary to

SMALL TAXPAYER
CARRYING THE WHOLE BURDEN
$
TAXES
PUBLIC UTILITIES
THE ECLIPSING SHADOW
COLLEGES
PUBLIC UTILITY CAREERS
DEAD LANGUAGES
RAH RAH RAH PUBLIC UTILITY RAH
WELCOME
THE LATCH STRING HANGS ON THE OUTSIDE
CHICAGO OCTOBER 20-27
WHERE DISTANT HILLS ARE GREEN TO THE UP-TO DATE MANAGER
THE LIFE PRESERVER
NEW UNDEVELOPED FIELDS
$
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TELEPHONE FIELD
UNITED STATES INDEPENDENT TELEPHONE ASSN. CONVENTION
LOOKING AHEAD AND PREPARING FOR IT
TELEPHONE MANAGER
RATES
$
SERVICE
PRESENT TELEPHONE SERVICE
FOR TELEPHONY

review not only the costs for past years and determine how they have been affected by conditions, but also to estimate what additional costs will be incurred to provide adequate offices and a trained personnel to take care of the increased number of patrons.

Consideration is also given to more economical and efficient forms of organization, in order to reduce the cost of rendering commercial service to the public to a minimum. Frequently arrangements are made with other departments for the joint use of employes where such an arrangement will provide adequate service to our subscribers.

Wage trends, requirements for stationery, office equipment and the publication and distribution of telephone directories are also carefully considered.

Having considered all these factors, the probable cost per telephone is arrived at for each year and this is applied to the estimated average number of stations for the period under consideration.

The estimates of the commercial department in connection with the provisional estimate express the probable demand of the public for service, measured by the effect that anticipated business conditions, past growth, and present development are estimated to have upon this demand.

A determination of the scope of the probable future demand affects the establishment of the facilities to provide it, the employment of people to operate and maintain these facilities, and the return to the investor.

Has Reduced Traffic Expenses But Net Is Less

In spite of the fact that the Northwestern Bell Telephone Co., on its Nebraska exchanges, reduced traffic expenses for the first eight months of the year by $174,000, it winds up the period with a $55,660 less than it had left for dividends, interest and surplus for the corresponding two-thirds of a year for 1921.

Several reasons exist for this. The company has about two and a half millions more invested in property than a year ago, and this has increased the necessary setup for depreciation of dividends and interest by $95,000. Toll revenues fell off $36,000; maintenance, not counting extraordinary repairs, increased $56,100, and taxes have gone up $30,174. Other increases have been: Commercial expenses, $5,212; general and miscellaneous, $7,725; license payments, $4,370.

The one encouraging feature of the situation is that the amount applicable for dividends, interest and surplus is now running $57,000 a month, which is about $6,000 a month better than the average. Included in maintenance cost is a considerable part of the expense of installing machine switching in Omaha exchanges, and this machine switching is responsible for the decrease in traffic expenses largely. The graphic chart submitted with the report shows that the revenue peak of 1921 was due to large toll earnings, and that the expense peaks have been in the early months of the current year.

The company now has a plant investment in Nebraska of $18,000,000. It operates 100,054 stations of its own, an increase in eight months of 949, and connecting stations number 173,425, an increase of 989. The total investment per company station is $182.

Following are revenues and expenses for the eight months of 1922:

Exchange revenues	$2,247,000
Toll revenues	723,000
Miscellaneous revenues	175,000
Total	$3,153,000

Gross increase, $43,000.

Maintenance	$ 504,390
Traffic expenses	835,011
Commercial expenses	274,688
General and miscellaneous	111,773
Depreciation	601,476
Licensee revenues	136,894
Taxes	229,204
Total	$2,744,933

Gross increase, $35,718.

Available for dividends, interest and surplus, $408,196.

Holes Cut in Telephone Cables by Rats Interrupt Service.

In 1921, according to an item in the Bell Telephone News, there were 48 individual cases where cables were damaged by rats in Chicago. This damage resulted in several hundred subscribers' stations being in trouble. The majority of these damaged cables were in buildings or in the subsidiary cables extending from the manhole into the building.

A telephone cable is made up of many small wires, each insulated from the others with thin paper and then the entire bunch enclosed in a cylindrical lead sheath about one-eighth inch in thickness. The efficiency of the cable depends largely upon the dryness of the paper. The rats injure the cables by gnawing holes through the lead sheath which allows moisture to enter.

Sometimes they cut the wires, causing an open circuit, or cut away the paper insulation, allowing the wires to become short circuited. A hole cut in the sheath is liable to cause a failure in service of all telephone lines working in the cable.

"Why do rats gnaw holes in cables?" is a rather difficult question to answer. Do they find the lead a good sharpener for the teeth or do they suspect that it contains something for them to eat?

One wise boy said the rats thought the cables were lead water pipes and as they were thirsty, they cut a hole in them to get a drink. The more learned and experienced cable repairmen state that the rats gnaw the cables because they offer an obstruction which hinders the rats from going from one room or building to another.

The cables usually enter a building or go from room to room through a small opening which is not entirely filled by the cable and the rat may desire to pass through by the same opening. Finding there is not quite space enough, he attempts to remove the cable. Since most of the gnawed places in cables are found at such locations, it may be safe to assume that this explanation of the rats' activities is correct.

Regardless of what the true explanation may be, the trouble caused by rats is another instance of interruption to telephone service which is not within the power of the telephone company to prevent.

Standardization of Radio Receiving Equipment.

Correspondence has been conducted with manufacturers concerning the radio receiving apparatus on the market and the material collected for a revision of letter circular No. 66 of the Bureau of Standards. Arrangements have been made with F. H. Day of the Bureau of Foreign and Domestic Commerce whereby that bureau will take over the activities of the Bureau of Standards in connection with this list and will prepare future revisions.

The chief of the radio section of the Bureau of Standards attended a meeting of the standardization committee of the Institute of Radio Engineers in New York on September 12.

Closely allied with the standardization of equipment is the revision of rule 86 of the National Electrical Code and some correspondence has been carried on with W. S. Boyd in connection with this subject.

United States Has Two-Thirds of the World's Telephones.

The United States had 65 per cent of all the telephones in use in the world at the beginning of 1922, according to a compilation by the New England Telephone & Telegraph Co.

The total number in use in the United States on January 1 was 13,891,189, or about one telephone for every eight persons. Germany ranks second with 1,809,574, or about one for every 33 persons. Great Britain ranks next with 986,964, or about one for every 50 persons. France had 473,212 and Sweden 389,830. Canada was ahead of the large European powers with 856,266, which is slightly better than an average of one telephone for each 10 persons.

Japan ranks seventh, with 311,000; Holland has 158,830; Switzerland, 152,336; Norway, 132,364; Argentina, 116,664; Italy 114,977, and the balance of the compilation shows less than 100,000 telephones.

Sundry Snapshots Along the Trail

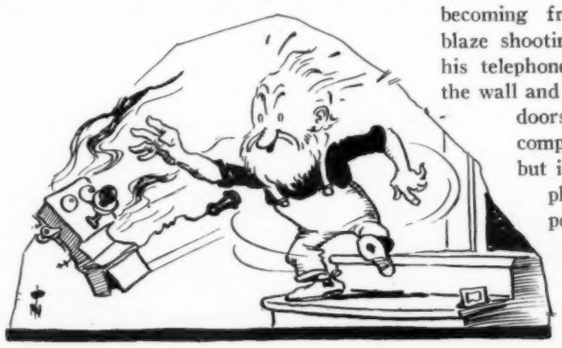
Observations and Comments, Pertinent and Otherwise, On the Sunshine and Shadows of Telephone Work

By Well Clay

Little Willie "Wish 'at," mad as he could be;
Some one stole the walnuts from his favorite tree.
When he went to get them, not a one in sight;
Willie took an empty sack home with him that night.
Wasn't really Willie's but it seems 'at he
Had always been the first one to gather from the tree.
Always went out early, after a windy night,
Sneaking through the bushes, keeping out of sight,
'Cause you see the owner might chase him away;
Or, worse yet, arrest him and make him to pay.
But when they beat him to it, Willie threw a fit,
"Wish 'at I could find the thief, I'd beat him up a bit."

We sometimes go along doing things which we have no actual right to do, for so long that we finally get to thinking that it is our right so to do. Some day some one comes along and beats us to it, as it were, by usurping our field of action, and then we do put up a holler right.

For years we have been building lines along the public highways almost as we saw fit; going from one side of the road to the other, as the notion struck us, without any particular thought as to future consequences or present requirements of road traffic. We crossed over to avoid running through a bunch of trees, or because it ran through a pasture instead of ploughed land, or, to accommodate the man who took the telephone, when the man on the other side of the road refused.



"One Patron, When He Saw the Blaze, Grabbed the Telephone and Tore It Off the Wall and Carried the Blamed Thing Outdoors."

Now come the "high lines," so-called, with their high voltages, which, in order to avoid our lines, cross and recross their lines here and there. Then we kick on account of the overhead menace with which we are subjected. We think now that there should be more rigid laws to control the power companies in their crossing and paralleling of our poor little grounded lines. Of course, not all the rural companies are giving service over grounded lines, but about three-fourths of them are in this neck of the woods.

Where the power lines cross and recross our lines, there is always the danger of their heavily-charged wires falling down on ours and raising hob generally. In a recent occurence a line carrying 26,000 volts, which crossed a telephone line, caused trouble because the insulator of the power wire cracked across, letting the bare wire rest against the iron pin which held the insulator.

The current arced through the pin and the brace iron and set the pole on fire at the junction of the two braces. This burned the pole straight through at the top and in falling over, the top fell with its other attached wires, across the lead of a rural telephone company. The current, instead of burning off the wires and grounding, shot into a distributing can on the edge of town, a mile or more away, and fused all the strips on one side in going to ground on the sheath of a cable which ran down the pole to unprotected underground.

In addition to this, it set fire to several telephones along the line and burned them out completely. No one was hurt but it was a narrow squeak because one patron, becoming frightened when he saw the blaze shooting a foot or so high out of his telephone, grabbed it and tore it off the wall and carried the blamed thing outdoors. Of course, the power companies had to pay the damage but it would have pleased the telephone company lots more if the power lines were somewhere else.

With all the telephone wires already in place, it is hard for the power companies to avoid these crossings, and it is almost impossible for them to avoid having trouble at times. In arranging for protection against such accidents, it seems that there is none when the voltage exceeds 5,000—that is, nothing will serve to carry off any current in excess of that voltage without damage.

We may argue that we are here first and are entitled to the right of way over any other company erecting poles and wires—but that probably will not hold because the farmers are just as much entitled to lighting and power service on their farms as they are to telephone service, and it stands to reason that we must share with them the highways which are the only available avenues through which the rural public can be served that is within the means of the companies to use.

"We Crossed Over to Accommodate the Man Who Took the Telephone When the Man on the Other Side Refused."

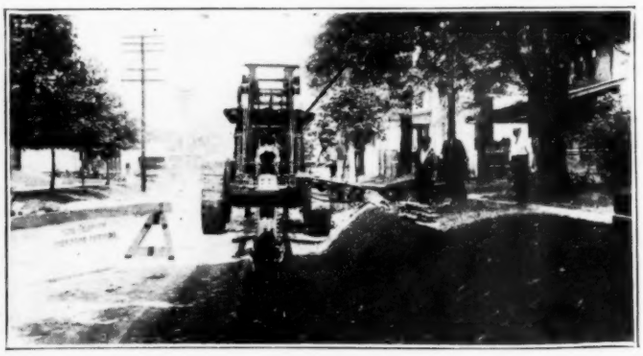
If the power companies are compelled to buy their right of way, the farmers will have to pay more for their lighting and power service, which is already plenty high on account of the fact that they are so widely scattered, making it an expensive matter to serve them. We, who have been in the habit of looking upon the highway as our own property, will have to do a little revising.

It is plain to be seen that we ought never to allow the power companies to over-build us for any great distance on account of induction. It may be cheaper in the end, when power lines are being built through your territory, for you to arrange to rebuild your lines so you will be on one side all the way and give them the other. Get them, at least, as far away as the height of their poles, if you can, so if their line falls over it will not come in contact with yours. It may cost you something but I believe it will be cheaper and more satisfactory in the end.

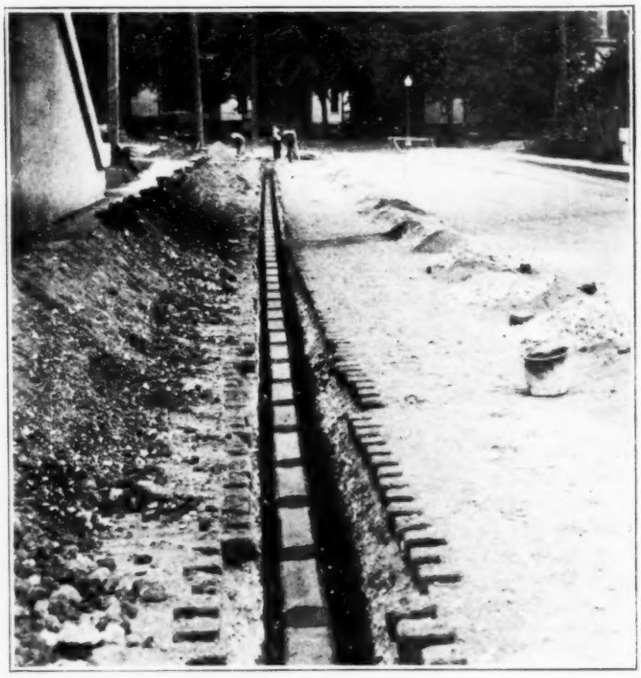
We cannot keep the power companies out, if we wished to. As for making them pay for interference with grounded lines, I believe it could not be done if a full metallic line is to be taken as standard. No use to holler "thief!" at the other fellow, but accept conditions as they are coming up and make the best of them.

APHORISM: Better divide the ducks than to quarrel.

Putting in the Underground Cable



BREAKING UP THE PAVEMENT AND DIGGING THE TRENCH PREPARATORY TO LAYING CABLE.—Down in Fort Wayne, Ind., the Home Telephone & Telegraph Co. Is Laying Cable Underground as Part of Its Construction Program for a "Greater City." The First Illustration Shows the Pneumatic Pavement Cutting Machine and the Air Compressor Which Operates It; the Second Shows the Rear View of the Trench-Digging Machine and the Work It Has Just Done in Digging and Removing the Earth.



COMPLETED TRENCH READY FOR SIX-DUCT CONDUIT AND CONDUIT IN PLACE AND CEMENTED.—The Home Company Has Just Completed One Large Job of Over a Mile and a Half of Trench and Is Starting Another of Something Over Six Miles. Approximately 35 Miles of Trench Are Involved and It Is Expected the Work Will Be Completed Within the Next Three Years. Necessitated by Fort Wayne's Growth, the Company Has Under Way An Extensive Program for Additional Plants and Improvement.

ANOTHER VIEW OF THE DIGGING MACHINE AND, FINALLY, THE MACHINE WHICH TAMPS THE EARTH BACK IN THE TRENCH.—The Home Telephone & Telegraph Co. Loses No Chance to Bring In a Little Publicity, as Will Be Noted from the Sign "Home Telephone Underground Extensions" Which Is Hung on the Barricades. Modern Machinery and Modern Methods Have Dispensed With Much Hand Labor in Outside Telephone Plant Construction, Just As They Have in All Other Kinds of Work.

What Is Your Company Doing?

Chats About Company Doings.

By Stanley R. Edwards.

The Seattle employes of the Pacific Telephone & Telegraph Co. in their educational demonstration "Your Telephone Service—How Rendered" are spreading among the people of that city what they are doing in their constant efforts to render a good telephone service and, in a tactful way, present to the public how a large percentage of telephone troubles are due to the improper use of the telephone. That good results are being accomplished is evidenced by the large attendance at each demonstration and the interest shown by the public in general.

At the conclusion of each performance much favorable comment is expressed by those in attendance as to the splendid and efficient manner in which the entire program is presented. Letters of commendation have been received by the company from state officials, civic organizations, clubs and individuals, who have witnessed the demonstration, indicating that the people sense the spirit of service existing among the telephone employes.

The equipment used for demonstrating is designed so as to represent actual central office equipment and is set up so as to represent conditions obtained in a central office. This plan permits of a most effective demonstration of the features involved in rendering telephone service. The switchboard sections are of actual size and of mahogany finish so as to exactly resemble the central office boards.

Two small stands are used for the purpose of representing subscribers stations. On each stand is mounted a telephone. These stands are placed as far away from the switchboards as possible and yet in full view of the audience that they can more clearly picture a call being completed.

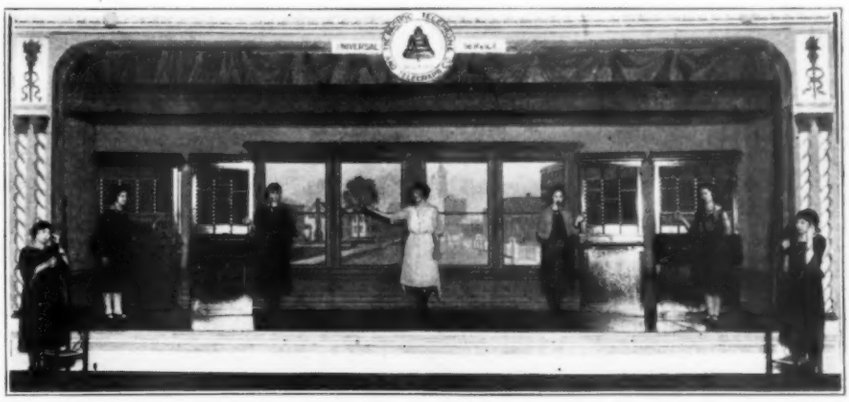
A young lady at each stand impersonates a subscriber and the effect of having them talk through their telephone to the operators, showing the lights signaling on the boards as they place their calls and hang up, leaves a vivid picture of actual performance.

One of the features of the demonstration is the audible transmission to the audience of the ringing and busy tones.

This is accomplished by the use of standards five feet high upon which are mounted standard telephone receivers with a small megaphone fitted over the caps. These receivers are wired to the ringing tone and the busy tone so that during the demonstration these tones are easily distinguished by the audience.

Seattle's scheme of having a regular stage effect in presenting their demonstration is unique and presents a very complete and attractive appearance. The stage equipment is light and easily handled. It is so constructed that it is adjustable to meet any conditions as to width, height and depth. There are two drop curtains used in connection with the demonstration. One is used for stereopticon views and the other to illustrate plant construction.

A curtain is used at the back of the stage, painted to represent the walls of a central office with four windows in the center on which are painted scenes of a business section on the right hand and a residence section on the left. The buildings are of local interest and easily recognized. A draw curtain of old gold color in two sections operates from either side to open and close as required.

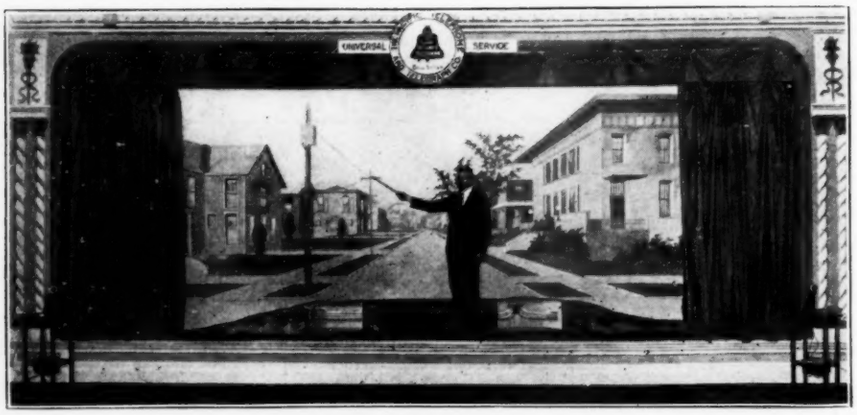


Attractive Setting Used at the Seattle, Wash., Exchange of The Pacific Telephone & Telegraph Co. to Show the Public How Calls Are Handled.

In order that the switchboards may be within vision of the entire audience in a hall where raised floors are not available, an adjustable platform is provided. Lighting effects are produced by two strips of side lights, eight feet long, containing 12 lights each. These lights are hung at a proper angle at each side of the proscenium and are regulated by use of a dimmer to produce proper light effects.

Very little in the way of entertainment has been provided. A novel 12-piece telephone orchestra, comprised exclusively of young ladies from the different depart-

The District Meeting of the Minnesota Telephone Association, Held at Alexandria, September 20, Was Attended by Both Operators, Managers and Plant Men—Nineteen District Meetings Have Been Held With a Total Attendance of 800.



Curtain Scene Used in Seattle Educational Demonstration, "Your Telephone Service—How Rendered," to Illustrate Talk on Plant Construction.

ments, furnishes selections at each demonstration, and usually a vocal selection is rendered. These musical numbers with the introductory talk by a commercial employe, plant talk by an employe of the plant department, followed by the demonstration, constitute the entire program, especially for noonday meetings and before fraternal and other societies which usually have their business meeting or other program of their own to carry out.

This entire program requires 45 minutes. Occasionally for evening meetings, when requested and it seems desirable to consume more time, the program is supplemented with stereopticon views of the company's plant, etc., and additional instrumental selections by employes other than those comprising the orchestra. With these additions, the time consumed is about an hour and twenty minutes.

The first public demonstration was given before the Rotary Club on May 3, 1922, since which date 69 demonstrations have been given before a total of 17,640 people.

That a great deal of good is being accomplished by the demonstrations is manifested by the interest exhibited by the audiences throughout the entire program and the enthusiastic manner in which the employes taking part in the demonstration perform their duties.

John H. Wright, vice-president and general manager of the Jamestown Telephone Corp., Jamestown, N. Y., is a firm believer in advertising and being an old newspaper man, knows its possibilities.

He has for years been a consistent user of space in the local newspapers and has just started a new campaign along a rather novel line.

Mr. Wright has contracted for space three columns wide and ten inches long to be used twice a month. In this space will be published a miniature newspaper headed "The Telephone News" with regular volume numbers and date lines.

The text is set in straight reading matter, 8 point type and columns are 9 ems wide for a total of four columns with a border all around it.

The first issue of this minature newspaper within a newspaper, "The Telephone News," is reproduced on this page, being of course much reduced in size. Occassionally illustrations will be used to help drive home the messages.

"The Telephone News" will be used for conveying to the Jamestown public from time to time messages concerning various phases of the telephone business. These messages, it is hoped, will be presented in a manner so interesting and instructive as to create an interest among the readers of the newspaper. Incidentally the company expects to establish and maintain more friendly relations with its subscribers and with the public, which will lead to a larger and more satisfactory patronage.

THE TELEPHONE NEWS

VOL. I. TUESDAY, OCT. 10, 1922. NO. 1.

THE TELEPHONE NEWS.

Published Semi-occasionally by the

Jamestown Telephone Corporation in the Interest of its Telephone Subscribers.

SALUTATORY

THE TELEPHONE NEWS, to be published every now and then, is to be a newspaper within a newspaper. Its purpose is to publish the news of the telephone to Jamestown—news of the outside telephone world, news of the local exchange and system, notice of changes in telephone service that affect public convenience—in a word, news of all telephone happenings that are in the interest of better service.

No imagination is needed to picture the large place the telephone industry fills in the life of this community.

There are nearly 8000 local telephone stations connected with the Jamestown system. Every day 47,000 local messages go through the exchange. Its long distance service is used daily by more than 500 persons.

Because of its aim to make this great system of communication of increasing value to telephone users the Jamestown Telephone Corporation has decided to carry these messages of better service to its patrons at frequent intervals.

Believing that no medium equals the public press for this purpose, the Company has established THE TELEPHONE NEWS, of which this publication is Vol. I., No. 1. Subsequent issues will appear in this newspaper from time to time.

* * *

SERVICE THAT SATISFIES

We doubt if there is a private concern in Jamestown making as determined an effort to please its patrons as is being made by the Telephone Company. The employes of the Telephone Company realize that their largest success depends on the extent to which they are able to enlist the interest and support of the public. That is why Jamestown telephone service satisfies.

KEEPING THE PUBLIC INFORMED

The more the public knows about the problems of the Telephone Company that serves it, the better the people will understand that this Company is an instrument for their own use and not simply for the purpose of extracting money from them: they will understand that the rates for service should vary just as the price of merchandise varies in keeping with the cost of production. The Telephone Company in a very real sense, is a servant of the people. The interests of the Telephone Company and its patrons are identical. Anything adverse to one affects the other

* * *

Ask Gossiping Time Cut

Sacramento, Cal.—A resolution calling upon local telephone companies to encourage their women subscribers "to use their telephones a reasonable length of time when talking for social purposes" has been adopted by the Sacramento Women's Council here.

The Jamestown Telephone Corporation inaugurated the five-minute rule on party lines which has now been in force more than a year and has worked out to the entire satisfaction of all of our subscribers.

Telephone subscribers in Jamestown are always willing to observe any reasonable rule promulgated by the Telephone Company. That's why our service satisfies.

* * *

Issuing the Telephone Directory

The *October* issue of our telephone directory is now on the press and will be ready for distribution about the 15th of the month. It will be the largest and most complete telephone directory ever issued in Jamestown, containing, in addition to the alphabetical list of subscribers, a complete classified section.

To most of us a new telephone directory is merely a new clean book to hang up by the telephone. It is a new directory—nothing more, but to some of the employes of the Telephone Company, it has meant several weeks of hard painstaking labor.

In the first place, after the names have been set in type by the printer, the proof must be carefully read by employes of the Telephone Company; read for errors in spelling and the numbers checked against the records of the Telephone Company. While the type is being prepared by the printer, constant changes in the subscribers' listings are being made, due to moves, new telephones, etc. All of these must be carefully watched for a name may be omitted or a wrong telephone number inserted.

The directory itself is quite a sizable proposition. For one issue we use over a quarter of a ton of stock for the covers alone. The pink paper on which the classified section is printed weighs nearly three-quarters of a ton and the complete edition, when ready for distribution, weighs more than two and a half tons.

* * *

Telephone Accuracy

From the simplest test of memory to the most elaborate specifications, whenever an order is given, it is the custom of most people to put it in writing. This is to assure accuracy. Most people are afraid to trust the ability of the one receiving the order to get it correctly unless the order is written.

This is a tribute to the skill and training of employes of the telephone systems of the nation. Last year more than 16,455,000 conversations were held over the lines of the Jamestown Telephone Corporation. Each of these conversations required the giving of an order to one of our employes. Yet not one of these orders could be put in writing.

Some were given in loud voices, some spoken in murmurs, some clearly stated, some mumbled. Yet so remarkable is the standard of accuracy among our employes that more than 99 per cent of all these orders were correctly received and executed.

Muffling the Telephone

Here is one that actually happened in Jamestown a few days ago. The Circulation Manager of one of the local newspapers, we won't mention his name, but he works nights, asked his landlady the other morning to muffle the bells of the telephone as he wished to sleep all day. Toward noon he was awakened by the terrific ringing of the telephone and to his surprise found that instead of muffling the bells she had wrapped the desk telephone in a large quilt.

* * *

Personal Paragraphs

Mr Frank B. Stevens, Wire Chief for the Telephone Company, has resigned and accepted a position in the Enginering Department of the New York Telephone Company at Buffalo. Mr. Stevens has been in the telephone business in Jamestown for the past twenty years, first as Wire Chief for the old Home Telephone Company, then later with the New York Telephone Company, and with the Jamestown Telephone Corporation since the merger. He will reside in Buffalo.

Mr. Nelson J. Neill, one of the efficient troublemen of the Telephone Company, has been compelled to relinquish his position temporarily on account of his health, and on the doctor's advice will spend the winter in Florida.

Miss Mabel Pearson, Chief Operator, has accepted an invitation to assist in conducting an Operators' School at Syracuse, N. Y., on October 17th and 18th

* * *

That's Why We Advertise

The codfish lays a million eggs
While the helpful hen lays one.
But the codfish does not cackle
To tell what she has done.
And so we scorn the codfish coy,
But the helpful hen we prize,
Which indicates to thoughtful minds
It pays to advertise.

Reproduction of the First Issue of the Miniature Newspaper Within a Newspaper, "The Telephone News." This Is the Latest Idea of the Jamestown Telephone Corporation to Keep the Public Informed.

A LANDMARK

By Miss Anne Barnes

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa.

I am an old, old building in an old, old town; in fact, I have the distinction of being the first business place erected away back in the days when even the railroad was in its infancy. I stand in the heart of the town.

Today, buildings of massive structure tower far above my roof. The path which once led to my door is now a paved street bordered by a cement sidewalk. My view up and down the street has been cut off by these later buildings, as they were set out to the walk's edge instead of being set in line with me. It looks as though the townspeople are becoming ashamed of my old-fashioned structure and my shabbiness.

To make matters worse, the two large, old, shade trees near which I was built were ordered cut down by the contractor who laid the cement sidewalk. When my two old friends were stricken down by the ax and my weather-beaten surface was exposed to the glaring rays of the sun, the buildings across the street winked and nudged each other as they viewed me clearly for the first time.

I had always considered that my record more than offset the newness of these later structures; but it has lately dawned on me that I am just a shabby old landmark which is holding together longer than has been expected—or desired. Now, I am proud no more. I am cold and desolute for lack of warmth, life, and human inhabitants.

But even an old, old landmark in an old, old town must not block progress in the town it has helped to start. Some day, not far distant, these old walls of mine will be razed to the ground; they will go back to the earth from which they started, taking their silent records of a century's history with them.

Today, a new bank building stands where the old landmark recently stood.—*Progress.*

* * * *

Nellie was an old, old operator, working for an old, old company; in fact, she had the distinction of being the first operator that the Home Telephone Co. had employed, away back in the days when the Home company had opened for business—twenty-five years ago.

The telephone company needed no directories in those far distant days, when Nellie served in the double capacity of operator and directory. Nellie's head could hold as many numbers as a pincushion can hold pins; and there was always room to tuck away another number or other useful information, such as the latest recipe for making jelly, a good hive compound, or the way Maria Closefigure turned her silk dress without showing the old stitches, etc., etc.

But as board after board was joined to the old section on which Nellie started, Nellie's head became as unreliable for holding more numbers as an old pincushion, which has done a quarter of a century's service, becomes for holding pins. Nellie, however, never admitted—even to herself—that remembering numbers had become a lost art for her. I should say *not!*

As Nellie never grew in experience past the old section, it was impossible to change her to another board or to another position in the office. Nellie did not observe the rules and instructions for handling calls as the other operators did. She seemed to consider that since she had given her young life to the cause the company had no right to dictate a policy to her; no, not even suggest one. I should say *not!*

When the first directory was issued, Nellie ignored its existence. For example: When a patron said, "Four-three-nine, Nellie," (all of the old-timers knew Nellie) she replied something to this effect:

"Do you want Colgate's grocery, Mrs. Oldtimer?"

"Yes, Nellie, I want Colgate's. Is that the number?"

"I'll ring Colgate's," said Nellie, in a don't-worry-to-look-up-the-number-for-*me* tone of voice.

"Nellie has that other bunch up there all beaten to pieces for accommodation," mused Mrs. Oldtimer while she waited for an answer from her party.

Nellie would not report a line busy; instead, she would say,

"You wait there, Mrs. Oldtimer. I'll watch the line for you."

If the chief operator called Nellie's attention to the fact that all calls for parties by name must be referred to the information operator, she explained,

"When I have been putting up connections for Mrs. Oldtimer to Colgate's grocery for the last 25 years, do you think I am going to start now referring her to the information operator for the number? I should say *not!*"

If Nellie's cords could have uttered a sound, they would have screamed for mercy when they saw her horny hand reach to grab them and wring them out of the multiple, in the same manner that she would have wrung a chicken's neck.

Then came the day when the old Home company sold out—sold out to the opposition. As was to be expected, every department was subjected to radical changes in methods of operation and in forces.

The many changes in the operating room bewildered poor Nellie. Her last vestige of self-confidence died when she noticed two operators nudge each other and smile at something she said to a subscriber. Of course, they were rude, but it was at this time that poor Nellie realized how shabby all of her old-fashioned operating must seem.

"I am only an old-fashioned landmark of the Home company; its work is done. As I am an inseparable part of the old Home company, my work, too, is done," sighed Nellie. Nellie resigned.

"The new company gives snappier service than the old one gave," muses Mrs. Oldtimer while she waits for her answer from her party.—*Progress.*

Training Long Distance Operators

Types of Girls Selected for Training As Toll Operators—Careful Attention Given Fundamentals of Long Distance Operating—A Paper Presented at the Jamestown Meeting of the Up-State Telephone Association of New York

By Miss Etta Earl

Chief Operator, Toll Operators' Training Department, New York Telephone Co., Buffalo, N. Y.

The selection of long distance operators is even more important than local operators, for we require a higher grade girl as the nature of the long distance work is such that the operators are required to take the initiative in dealing with the called or calling party or with another office, and in most cases they must use their own judgment in dealing with the public. This means the operator must think and act quickly and be constantly on the alert.

We prefer girls who have had at least one year in high school; this does not mean, however, that we bar girls of less education, for we have found some eighth grade girls who are very intelligent but have not had the opportunity of finishing school. When given a trial in the training department they have done very satisfactory work and have become good toll operators.

The person who interviews the applicant considers what she is capable of being, rather than what she is at the time interviewed. During the interview with an applicant we require her to read aloud a paragraph from the operating instructions in order to determine whether she has clear voice, good enunciation, and whether she reads with expression, as it is very necessary for toll operators to speak clearly and have good enunciation. After the applicant is engaged, this is impressed upon her mind each day and she is drilled daily on the proper use of an operator's voice. The girls we employ must be girls who are healthy, reliable, courteous and of good character.

In offices such as Jamestown where a separate toll board is maintained, or in smaller offices where there is a separate toll force, we have found it advisable to train new people for the long distance work rather than trying to make long distance operators out of local operators. The latter have the local work firmly fixed in their minds and it is a great deal harder for them to adapt themselves to the long distance work than it is for a girl who knows nothing about it.

Then, too, after spending $50 or perhaps $100 to train a girl to be a local operator, it is not advisable to train her later for toll work. She requires just the same amount of training as a new girl, and after a few months you will find the new girl the best long distance operator as she has had no knowledge of the local work to confuse her in handling of long distance calls. In the smaller offices where the operators handle both local and toll, it is better to spend a greater time training them for the operating as knowledge of the local is easier to acquire.

In the larger offices, such as Rochester, we usually start with a class of six people. This seems a small number to train in comparison to the people trained for local work, but in this way the girls get individual attention and, as the long distance work is so much more difficult to learn, we could not turn out larger classes successfully, as it is possible to do with the local students. The long distance students are given from 50 to 100 per cent supervision, so for six people we require at least three instructors. These instructors must be patient, tactful, willing to learn themselves and must have a pleasing personality as the success of the class depends largely upon the instructor. For this reason the instructors should be enthusiastic, earnest and cheerful in their work.

In an office the size of Jamestown or any office where a separate toll force is maintained, after the opening talk, which is a friendly, informal talk explaining the rules by which they are to be governed, the instructors take the students for a visit to the operating room. The purpose of this visit, primarily, is to satisfy their natural curiosity as to the nature of work in which they are to be engaged. It tends to form a picture of the goal to be attained that will help arouse interest throughout the course. While they will secure some ideas which will be useful later in the course, they are not intended to acquire any technical knowledge of operating during the visit and detailed explanations are avoided.

The student's first impression is apt to be one of bewilderment and confusion unless the instructor selects for comment only the simple features of the switchboard that are within the grasp of a person unacquainted with the telephone work. Just sufficient explanation is made to give the student some conception of the general function of a toll office, but to leave her with a degree of curiosity about the details of the work. The division of the work into recording—out and inward—is shown during the visit and the instructor points out the particular kind of work for which they are being trained.

At the close of the visit to the operating room, the class is taken to the classroom for discussion. The instructor then has an opportunity to find out what impressions the students have received and to clear up any misapprehensions they may have.

A study and drill period is then given to familiarize the students with the names of distant places having codes and their codes. They are required to learn the codes to all direct circuit points and built-up circuits to which we have a large number of calls.

Following this, the demonstration of practice equipment is given. One instructor takes charge of two students. The students are seated as for switchboard practice and the instructor explains the details of the switchboard, giving the students ample opportunity to ask questions and allows them to handle the equipment freely. This helps to overcome a natural feeling of strangeness before the first lesson of the course begins.

The lessons follow in rotation, two being given each day. A study or recitation period at the demonstration board or as classroom work follows each lesson presented. By the demonstration board I mean a small, portable board. This board is equipped with subscribers' lines or switching trunks, toll circuits, ticket signals, cords, supervisory lamps, keys, etc., so you see it is arranged in such a way that every kind of a call taught during the outward or inward course can be demonstrated. After the demonstration by the instructor, we require the students to

GROW MENTALLY.

Those who fail to keep growing mentally soon find themselves outdistanced in the inevitable competitions of existence.

One hardly needs to look further to account for the great frequency with which men in early middle life are elbowed out of good business positions by much younger men. Seldom, though, do those who are elbowed out appreciate why disaster has befallen them.

Such workers are not displaced simply because they have reached a certain age—forty, or forty-five, or fifty, as the case may be. They have forgotten—if they ever appreciated—that mental growth should be continuous with life itself, and that when mental growth ceases a man's usefulness begins to wane.—H. Addington Bruce.

The DIAL

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THE Dial is an essential feature of every truly modern telephone installation.

In every exchange where the telephones are dial-equipped, the subscribers are rendered service that is in every way satisfactory—quick, accurate, convenient service that builds good will, and encourages new business.

With the dial-equipped system the profits are ample, steady and certain. Automatic handling of all local calls makes operating costs low and uniform, regardless of labor laws and disputes, emergency traffic, epidemics or other factors that hamper manual operation.

The Strowger Automatic Telephone System is by far the oldest and most widely used of all dial-equipped telephone systems. It is backed by more than thirty years of continuous success in the operating field and is being rapidly adopted by operating organizations both large and small in every part of the country and in almost every country in the world. Every company using it can testify as to its economy and pleasing service.

Strowger Automatic equipment for large and small exchanges will be on display at the National Convention. Visit the Rose Room, Hotel Sherman, see it in operation, and ask our representatives for details.

ANNOU

The Latest and Be

Automatic Electric Company's New Type 21 Wall and Des
Valuable Features, and

FOR the first time in eight series of newly designed telephones will be offered the

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These new telephones are t months of development work automatic telephone manufac tion, and represent the very utility and beauty, and d design and construction.

Samples of both telephone play and available for your National Convention. See t Room, Hotel Sherman, also tive circulars giving full par

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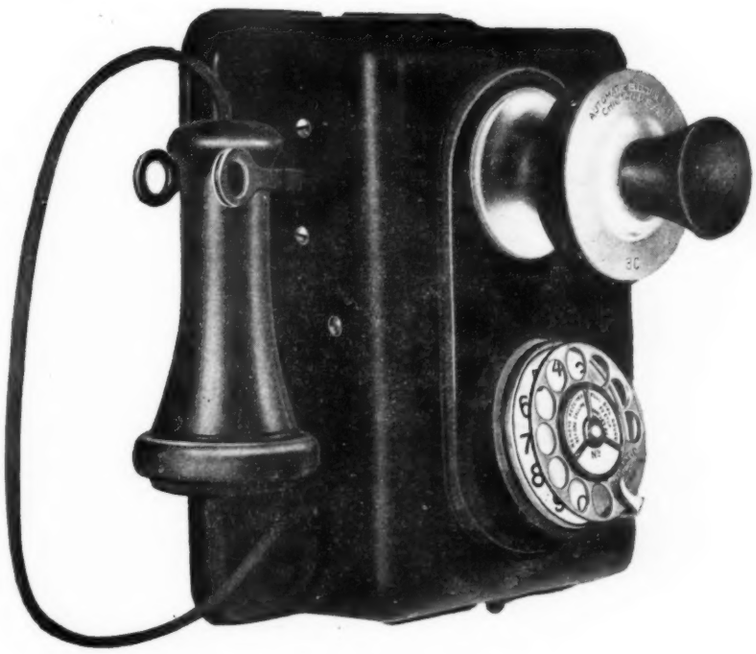

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LECTRIC COMPANY

ILLINOIS, U. S. A.

THE HOME OF THE
Strowger Automatic Telephone

AUTOMATIC ELECTRIC COMPANY'S factory, located at the intersection of Morgan and Van Buren streets, Chicago, has a floor space of ten acres, and is devoted exclusively to the manufacture of automatic telephone equipment and supplies.

The engineering and production departments of this pioneer company are backed by more than thirty years' experience in telephone design and manufacture. This organization is at the service of the entire telephone operating field, and stands ready to meet their requirements completely and promptly.

AUTOMATIC ELECTRIC COMPANY

Factory and General Offices Chicago, Illinois, U. S. A.

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Philadelphia The Bourse Bldg.	Columbus 516 Ferris Bldg.	Detroit 525 Ford Bldg.	Washington 905 Munson Bldg.

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The Genuine!

There is only one "Guaranteed Penetration Process" - its "the P & H". It guarantees- in writing - a **full one half inch** uniform penetration throughout the ground line area.

A written guarantee goes with every shipment of "P & H Guaranteed Penetration Process" poles agreeing to refund the butt-treating price on any pole that does not have the full specified half-inch penetration.

The "P & H" *Guaranteed Penetration Process*

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We can fill any pole needs - for Butt-Treated and untreated Northern White and Western Red Cedar poles - or for any form of Butt-Treatment.

Prompt Shipment assured by the convenient location of our yards in the North Central and Western States.

Our interesting folder on the Butt-Treatment of cedar poles will tell you the why and wherefor of the "P & H Guaranteed Penetration Process." Write for a copy.

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MINNEAPOLIS, MINN.

MAIN YARDS AND BUTT-TREATING PLANTS AT SAINT PAUL, MINNESOTA (Minnesota Transfer)

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Chicago, Ill., 19 So. LaSalle St. | Omaha, Neb., 513 Electric Bldg. | Dallas, Texas, 311 Sumpter Bldg. | Louisville, Ky. 1416 Starks Bldg.

come to the board and handle the different calls. In this way we know whether the student has a clear idea of what is being taught.

A demonstration board of this kind would be of great value to any office that is required to train toll operators. It is also valuable in retraining or review work. Local students do not go to the central office for commercial work until the end of their three weeks' training, whereas the long distance students are taken to the switchboard at the end of nine days' training when, with the assistance of the instructors, they are allowed to handle the regular calls.

As the student does not wear a set while working at the demonstration board, the instructor demonstrates to her at this time the proper adjustment of the set. She shows them how the breast plate must be drawn up high enough by means of the neck band, in order that the transmitter horn will be brought up to the level of the mouth and directly in front of it. She also explains that the receiver must be worn directly on the ear and if the hair is worn over the ear, it must be lifted so as to allow the receiver to fit properly.

During the course we impress upon their minds the importance of completing calls on the first attempt if possible; if not, they must be careful to follow up "Leave word" or call orders promptly. In getting information from the called or calling telephone, we try to impress upon the students the importance of assuming leadership in obtaining information and that they will have to think and act quickly in order to get the desired results.

If, in spite of the fact that all efforts to complete the call have not been exhausted, the calling party orders the call canceled when giving a delay report, we explain to them the importance of suggesting that the call be tried later or the next day. It is interesting to note how anxious the students are about canceled calls, putting forth every effort to get the call completed on the first attempt.

The student's work with relation to the completion of calls should be carefully supervised. From the first, her manner in dealing with subscribers should be carefully watched; she should be impressed with the need for courtesy and tact in securing necessary information from either the called or calling telephone. The students should be carefully coached on situations that require initiative and good judgment to complete a call, the instructor taking over the call if necessary and then carefully explaining why that action was taken in that particular case.

We try to bring out very forcibly the use of the toll lines. We try to impress upon them the importance of being sure they can read all the items on the ticket, that they have secured the calling line and know the proper route to be used before taking up the toll circuit.

After ringing on the toll circuit, they must remain cut-in until an answer is obtained or the circuit is found out of order; they must pass the call to the distant operator clearly and promptly and check the acknowledgment and remain in on the circuit until the called station answers or a report is received.

After reaching the called station they must announce the call promptly, ask the necessary questions if the called party is not immediately available, and pass the report promptly to the calling party.

At the end of about 3½ weeks the class is graduated into the long distance office where the student handles the long distance calls with the assistance of the central office instructor or the supervisor as when she leaves the school there are many operating features which she may encounter that have not been covered during her course in the training department.

The Nature of Speech and Its Interpretation.

Some very interesting and painstaking work has been done on the physical analysis of vowel sounds, but the results to date are far more conclusive. Although several theories have been advanced to explain the way in which the ear interprets sound waves, they are still in the controversial stage.

In a paper contributed to the Journal of The Franklin Institute, by Dr. Harvey Fletcher, of the research laboratories of the American Telephone & Telegraph Co. and Western Electric Co., some of the results of an intricate series of experiments during the past few years are explained.

To make a quantitative study of speech and hearing it is necessary to obtain the speech sounds at varying degrees of loudness and with definitely known amounts of distortion. The main reason why so few real results have been obtained in the investigation of speech sounds is due to the fact that it is extremely difficult to change the volume and distortion of these sounds by acoustic means.

Due to recent developments in the electrical transmission of speech it is possible to produce the equivalent of these changes by electrical means. For this purpose a telephone system was constructed which reproduced speech with practically no distortion.

It was arranged so that by means of distortionless attenuators the volume of reproduced speech could be varied through a very wide range, and so that by introducing various kinds of electrical apparatus the transmitted speech wave could be distorted in definitely known ways.

A method was developed for measuring quantitatively the ability of the ear to interpret the transmitted speech sounds under different conditions of distortion and loudness. By choosing these conditions properly, considerable information was gained concerning both speech and hearing. This indirect method of attack has a distinct advantage for engineering purposes, in that it measures directly the thing of most interest, namely, the degrading effect upon telephone conversation of introducing electrical distortion into the transmission circuit. However, the application of the results is not limited to this particular field.

Briefly stated the method consists in pronouncing detached speech sounds into the transmitting end of the system and having observers write the sounds which they hear at the receiving end. The comparison of the called sounds with these observed shows the number and kind of errors which are made. The percentage of the total sounds spoken, which are correctly received, is called the articulation of the system.

The telephone system used in this investigation is probably more nearly perfect than any other which has yet been built. Its essential elements are a condenser transmitter to receive the speech waves and transform them into the electrical form, an amplifier for magnifying the intensity of the electrical speech currents, an attenuator for controlling the intensity, an equalizing network, and a receiver for delivering the speech to the ear. The transmitter is simply an air condenser, one of its plates being a flexible metal diaphragm.

A five-stage vacuum tube amplifier was used. Particular care was taken in coupling the stages together, so that the amplifier was practically free from frequency distortion.

The attenuator consisted of a potentiometer arrangement which could reduce the amplitude of the speech waves to approximately one-millionth of their maximum values.

The equalizing network was an arrangement of resistances, condensers and inductance coils having a frequency selectivity which was the complement of that of the rest of the system.

The telephone receiver was a bipolar type having a special construction which was designed to broaden the range of frequency response.

Ear sensitivity curves indicate that each individual has a hearing characteristic which is quite different from other individuals. Consequently speech sounds differently to different persons. Any distortions of the speech sounds will necessarily affect some persons differently from others.

Experimental articulation tests showed that the ear interpreted the speech which was transmitted over this high quality system practically as well as that transmitted through the air.

Some may wonder why such good quality is not furnished telephone users in commercial practice: Scientifically speaking, it is possible to furnish such quality, but it is evident that the equipment involved is so complicated that such service

See the New French Telephone Battery at the National Convention

A new French Telephone Battery is ready for delivery and will be on exhibition at the National Telephone Convention. A newly perfected manufacturing process and new materials are combined to produce a battery with greater capacity, longer life, increased resistance to all the conditions that deteriorate batteries. This new battery will make even further reductions in operating costs. It is now ready for delivery.

Attend the National Telephone Convention at Hotel Sherman, Chicago, October 24 to 27, 1922, and see this wonderful battery.

You have our cordial invitation to make the French Battery Booth, Room No. 107, your headquarters while at the convention.

FRENCH BATTERY & CARBON COMPANY

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French TELEPHONE BATTERIES

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

would be altogether too costly for commercial use; people could not afford to pay for it.

The intensity of undistorted speech which is received by the ear can be varied from 100 times greater to one-millionth less than the initial speech intensity without noticeably affecting its interpretation. The intensity must be reduced to one-ten-billionth of that initial speech intensity to reach the threshold of audibility for the average ear.

Any apparatus designed to reproduce speech and preserve all of its characteristic qualities must transmit frequencies from 100 to above 5,000 cycles with approximately the same efficiency. Although most of the energy in speech is carried by frequencies below 1,000, the essential characteristics which determine its interpretation are carried mostly by frequencies above 1,000 cycles.

In ordinary conversation, Dr. Fletcher states, the sounds *th*, *f* and *v* are the most difficult to hear, and are responsible for 50 per cent of the mistakes of interpretation. The characteristics of these sounds are carried by very high frequencies.

It is evident that progress in the knowledge of speech and hearing has a great human interest. It will greatly aid the linguists, the actors, and the medical specialists. It may lead to improved devices which will alleviate the handicaps of deaf and dumb persons. Furthermore this knowledge will be of great importance to the telephone engineer, and since the telephone is so universally used, any improvements will be for the public good.

The Different Kinds of Toll Calls

The Toll Operator of Today Must Know the Merits of the Various Classes of Toll Calls in Order That She May Sell the Type Which Is Best Fitted for Each Case—Paper Presented at the Operators' Conference at the Illinois Convention

By Miss Margaret Dallas

Chief Operator, Vermilion County Telephone Co., Danville, Ill.

To the toll operators of a few years ago, a subject such as the one which has been given to me to discuss at this meeting, i. e., "Different Kinds of Toll Calls," would have seemed quite peculiar. In those days, with few exceptions, a toll call was a toll call, and to speak of different kinds of toll calls was to speak a foreign language, so far as the average toll operator was concerned.

Today, the toll operator is a very highly specialized saleswoman. She has various classes of goods for sale, and to be truly efficient in her business she must thoroughly understand the relative merits and uses of the different classes of merchandise in which she is specializing. In discussing this subject, therefore, it has appeared to me as advisable not only to bring out the technical phases of the various kinds of toll calls, but also to bring out the best application of those different classes to the needs of the various persons with whom we are doing business.

The telephone company is like the owner of a big department store in that it furnishes a very costly plant, which is capable of producing a merchantable commodity—service—provided the sales force, which for our purpose we may consider the toll operators, is sufficiently trained and experienced to adapt that service to the needs of the customers. In other words, although the telephone company may provide the best of equipment made possible by the most highly efficient engineering department, that equipment—commonly known as a telephone exchange—will be of very little practical value to the community if it is not operated as it was intended to be operated.

The operating force is the necessary base upon which all of the other departments are built. Just as the automobile does not reach its highest efficiency on low grade gasoline, so a telephone system will not properly function on low grade operating.

In speaking of this matter of toll operating efficiency, I do not mean to imply that a toll operator should take her time to discuss with the toll user all the various grades of toll service. In these days, when we are handling such a great volume of business, that of course would be impractical.

On the other hand, however, I believe that we should all keep in mind the fact that, when we are dealing with the telephone-using public, we are in a large majority of cases dealing with persons, who, not being familiar with the details of our business, very frequently do not say exactly what they mean; or in other words they may be putting in a call, thinking that they are getting a certain grade of service, whereas the toll operator or recorder may, if she is not careful, interpret the call in an entirely different way, with the inevitable result that later on the commercial department will have trouble in settling with a dissatisfied customer.

If the toll operator is truly interested in her work and is thoroughly familiar with the various grades of service, she can in a very large measure reduce such cases. In a very brief, but effective, courteous way she can set the toll user right and in many cases not only save him money, but also save valuable circuit time for the company.

There is, I believe, a distinct tendency at certain points to assume the attitude that it is not up to the company to suggest a better way for a man to get his telephone service, but on the contrary to sell him that service which will bring in the highest rate to the company. This, I believe, is wrong, because the highest grade of service—the one that brings in the most revenue for a call to an individual point—does not necessarily mean that the company makes the most money out of that charge.

For instance, if a party calling from a certain exchange to a neighboring city places a call for a particular party, he, of course, pays more for that call than he would were it handled as a station-to-station call.

However, it may be that it will require the use of a toll circuit for many minutes in securing that particular person, and the operator may spend a great deal of time to complete the call in that way; whereas had it been handled as a station-to-station call, it is quite probable that although the rate is lower for that service, still the return to the company will be relatively higher, by reason of the operator being able to complete the connection at a minimum expense of operation.

Therefore I feel that a blind selling of the higher grades of service does not necessarily mean a larger revenue to the company, and at the same time, it is not educating the public—our customers—to a more free use of the toll system.

With these general principles in mind, let us now take up the individual classes of toll calls and attempt to briefly apply them to the various needs of the telephone user. Toll calls are divided into five general classes. These classes originated with former Postmaster General Burleson's order during the time the telephone systems were under government control. They are: Station-to-station call, person-to-person call, the appointment call, the messenger call, and the collect or reverse charge call.

The station-to-station call forms the basis upon which all the rest of the classes are founded. It is the cheapest grade of toll service and it serves the double purpose of furnishing a moderate priced service to the public and at the same time reduces the circuit time necessary in com-

The Churchill "Receding Door" Telephone Booth---Patented

Pay station revenue will reach greatest volume with the safe, sanitary, compact, well-made "Churchill"—made by a pioneer manufacturer in the telephone field.

The booth is easy to enter—easy to leave. The **Receding Door** operates with **no** grooves in the floor—moving with a gentle pressure of the right hand.

Should a woman faint—when subject to excitement, hysteria—she cannot lock the "receding" door in falling. It travels around her—making possible an instant rescue.

When not in use, the door always stands open, and the booth gets fresh air between calls.

Narrow hallways or passages can contain the unit nicely—because the sliding door—when opened—extends only a maximum of 3½ inches beyond the front of the booth.

The booth is but 28½ inches wide and 29¼ inches deep, 83½ inches high.

A beautiful piece of furniture—finished in either Golden Oak or Mahogany—compact and rugged, yet handsome, whether used as a **single cabinet**—or in **batteries.**

It is shipped in highly condensed, knock-down form, an illustrated chart enabling anyone to assemble it with ease.

FOR EXPORT TRADE, especially, its shipping shape is superb.

A Better Booth at a Better Price.

The Fruit of 20 Years' Experience in This Field.

May we send you our literature and prices?

Churchill Cabinet Company

O. Gullicksen, Pres.

Phone Humboldt 1913

2101 Churchill St.

Chicago, Ill.

pleting the individual call, thereby making the return to the company in dollars higher.

In availing himself of this grade of service, the toll user tells the toll operator that he will talk to anyone at such and such a telephone number, or at such and such a residence or office, in such and such a city. It is like a man calling personally at a downtown office—he takes a chance in finding the man he wants to see in, or someone who is qualified to take care of his wants.

It is particularly fitted in cases where a man is away from his home and is anxious to keep in touch with conditions there. He can call his home at the lowest rate and be sure that whoever answers will be satisfactory. It is also very useful in many cases where a large corporation has offices in various cities. The home office can call out, using this method for one of its branch offices, without the necessity of specifying some particular individual at the branch office and, therefore, paying a correspondingly higher rate.

In cases of station-to-station calls, it is most important that the toll operator who records the ticket, place the code *AY*, anyone—in the proper place on the ticket, and that she secure either the telephone number or the name of the party in whose name the distant telephone is listed. The failure to insert the *AY* code on the ticket frequently results in the call being classified as a person-to-person call. This grade of service—station-to-station service—from an economy of operation standpoint probably produces a better financial return to the company than any other grade of service.

The person-to-person call is that in which the calling party says that he wants to talk to a Mr. Smith, or a Miss Jones, or some other specific individual in a certain city. In such cases, the toll operator must not only establish connection with the telephone number called, but must ask for the particular party, and get him on the line before the conversation starts.

This method of operating naturally requires longer time for establishment and, although it bears a higher rate than the station-to-station call, it frequently results in a higher cost to the company in rendering that service than is warranted by the increase in cost over the station rate.

Prior to the establishment of the various grades of telephone calls, practically everything was put through as a particular party call. As a result, the public were educated to place their toll calls that way. It, therefore, develops that a very large percentage of our toll business comes under this head of person-to-person calls.

The appointment call is a method whereby the calling party may request the toll operator to arrange for him to talk to a certain individual or to a certain telephone at a specified later hour In other words, Mr. Smith, calling from Danville, Ill., may request the toll operator there to arrange for him to talk to Mr. Jones, at Chicago, Ill., at 6:30 in the evening.

This requires that the toll operator go through and get Mr. Jones on the wire at Chicago, advising him of Mr. Smith's request and confirm the appointment. The ticket must then be held and at the proper hour the Danville operator must again get Mr. Jones on the wire and establish the connection.

This grade of service really necessitates the placing of two calls. While it bears a rate considerably higher than the person-to-person call, and 50 per cent higher than the station-to-station call, it requires a considerable amount of work upon the part of the toll operator and practically doubles the circuit time required for completion. It is a highly specialized grade of service and is not particularly widely used.

A messenger call is a grade of service which takes care of those calls where the called party is not a telephone subscriber. Obviously it must always take the messenger rate, which is 50 per cent higher than the station-to-station rate, and in addition to the actual charge for the conversation, it must bear the actual cost of sending a messenger to get the called party to the telephone.

On such a call the calling party will be advised that, inasmuch as the party he desires to talk to does not have a telephone, it will be necessary to send a messenger for him and that the cost will be approximately so much. Upon the calling party advising that he is willing to have the messenger sent and will pay the charge, the operator at the distant point arranges to have a messenger boy sent out, and when the called party has reached a telephone, the connection is established.

A collect call is one in which the person who calls requests, before he talks, that the charges for the conversation be charged to the party he is calling. Obviously this must take the person-to-person rate, even though the call is put in merely for a certain telephone number. In such a case, before the establishment of the connection, the operator must talk to the called party and secure his acceptance of the charges. If the acceptance is secured, the connection is established, and the charges are billed against the distant telephone.

It is important on such calls to advise the calling party, should he call merely for a telephone number, that if it is to be made a collect call, it must take the higher rate, namely the person-to-person rate. Care in explaining this to the calling party often saves a great deal of misunderstanding later.

In addition to these five classes of toll calls, there is a subdivision of the station-to-station call, whereby even cheaper rates may be obtained by the toll user on that one grade of service.

There is an evening rate, which goes into effect at 8:30 in the evening. From that time on until midnight, a station-to-station call may be placed at one-half the day rate. There is also a night rate, which is effective from twelve midnight to 4:30 in the morning, during which time the station-to-station calls are charged for at one-fourth the day rate.

It frequently happens, in cases of evening and night calls, that a party will put in a call during these hours thinking he will get a reduced rate, but not being familiar with the fact that these rates only apply to station-to-station calls he asks for a particular party. This, of course, makes the call take the person-to-person rate and the evening and night rate does not apply.

It is important, therefore, that the toll operator in taking calls during the evening and night hours should, if there is any question in her mind as to whether the calling party is expecting the evening or night rate, clearly indicate to the calling party that his call will bear the station-to-station rate.

These evening and night rates were designed to more equalize the bulk of toll business and to offset the extreme light hours during the night. They form a remarkable convenience to certain toll users, and a more general acquaintance upon the part of the general public with these rates would greatly enlarge our toll business.

An intelligent study on the part of toll operator of these calls, and consideration by her of how they may be best applied to meet the wants of the toll patrons, will do much towards increasing the general efficiency of the toll service.

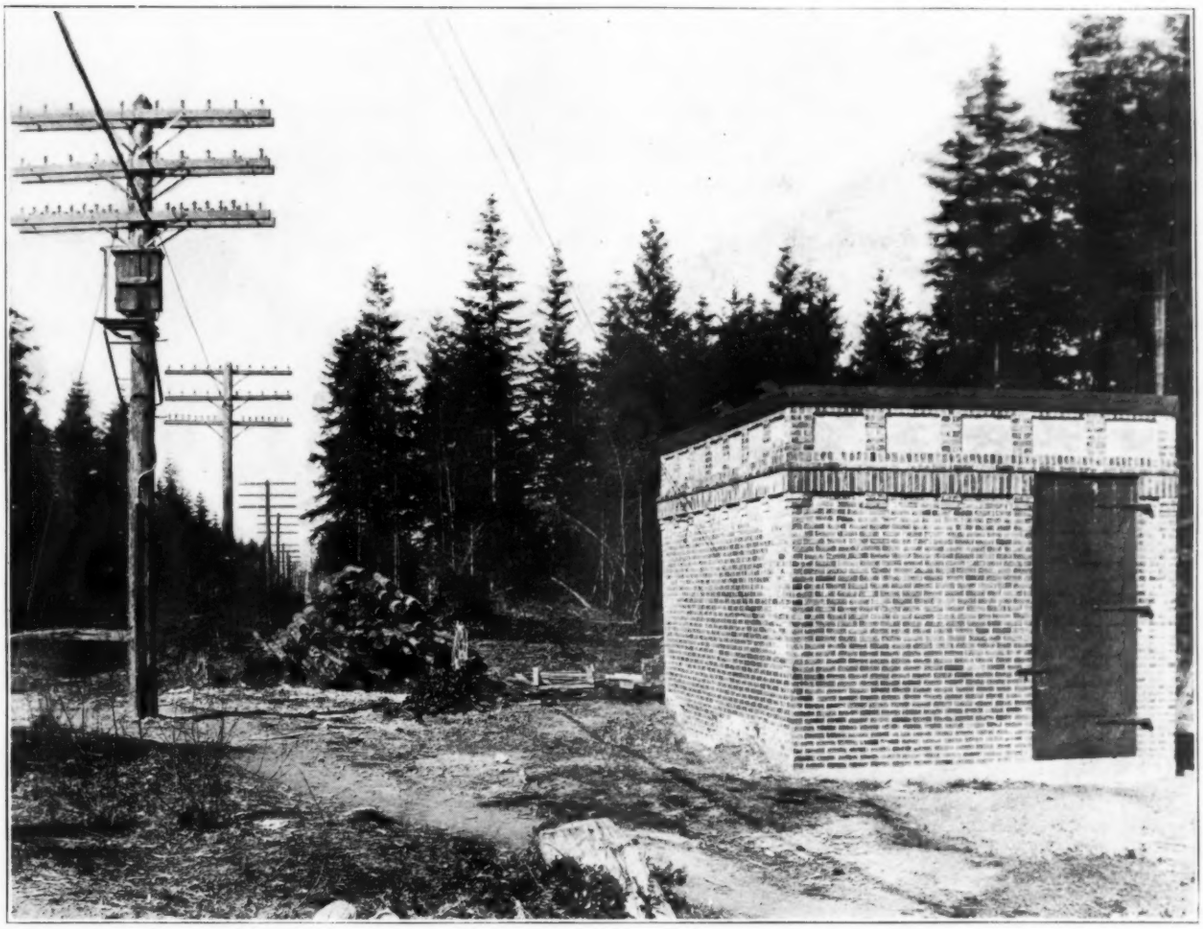
First Machine-Switching Office in Service in New York City.

The New York Telephone Co. at midnight, October 14, placed in operation the first machine-switching telephone central office in New York City. The new apparatus has been installed in the Pennsylvania central office district, Manhattan, and will serve about 1,700 lines.

The change affects only the telephones of subscribers served by the Pennsylvania central office. Other subscribers will continue to use the manual type of instrument and will give their calls to the operator. The new office has so co-ordinated with other offices in the city's telephone system that it is not necessary for any subscriber to know which type of instrument he is calling.

Several other central offices will be placed on a machine-switching basis of operation within a short time in various parts of the city. The new type of apparatus is being installed to meet the demand for new telephone service rather than to replace present equipment and will not cause a decrease in the number of operators now employed.

A Remote Controlled Automanual Telephone Exchange



A single operator located in a distant city exchange performs the switching operations for several equipments like that in the building shown above. UNEXCELLED TWENTY-FOUR AUTOMANUAL SERVICE IS GIVEN; only ordinary common battery lines and telephones are used. This system will solve the problems of your small exchanges and convert them into profitable properties.

Our descriptive literature is worthy of your attention.

The North Electric Manufacturing Co.

GALION, OHIO

Machine Switching Systems

Room 112, Sherman Hotel, Chicago, during U. S. Independent Tel. Convention

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

Commissions, Courts and Councils

Discussion and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchise, Rates and Service

U. S. Supreme Court to Hear New York Arguments.

The United States Supreme Court, on the application of the attorney general and the New York Public Service Commission, has advanced the date for argument upon the injunction order secured by the New York Telephone Co. from the United States district court restraining the putting into effect of the two decreases in telephone rates ordered by the commission on March 3 last, 5 per cent in exchange districts in Greater New York and over 7 per cent in the upstate exchange districts. The argument will take place in February.

This means an earlier decision on the state's appeal than would have ordinarily happened because of the long calendars now before the highest court in the United States. The appeal from the order issuing the injunction against making the decreased rates operative was taken by the state after the United States district court restrained enforcement of the commission's order directing the reductions in Greater New York and upstate, pending the final determination by the commission in the telephone inquiry before it, evidence in which it was expected would be closed this week.

It was the contention of the commission in appealing from the decision of the United States district court that the telephone company had taken its rate case to the United States court without exhausting its remedies before the commission and the state courts.

The United States district court granted the injunction to the company, restraining operation of the reductions ordered by the commission, stating that while it did not undertake to fix rates for telephone service, it was of the opinion that the return on the telephone company's property, as indicated under the commission's temporary ruling, "is and cannot possibly be a fair return for any business like the telephone business in or near the state or the City of New York at the present time."

Temporary Injunction Issued to Stop Power Line Erection.

A writ of temporary injunction, restraining the Rural Power Co., of Preston, Ia, from erecting high voltage transmission lines out of Davenport on the Harrison street road and Green Tree road in any position which will interfere with the lines of the Green Tree Telephone Co. was issued October 6 by Judge William Theophilus in the Scott county district court. The telephone company has filed a bond for $5,000 to secure the writ of injunction.

The petition for injunction came as the final step in a fight which has progressed steadily since the power company started to install its lines several weeks ago.

According to the petition filed in court, the Rural Power Co. has started the erection of transmission lines out of Davenport on the two roads. The telephone company has had rural lines along these roads for 10 years, it is stated, and the location of its lines was made according to official directions from the county board.

It is claimed that the power company has erected some of its poles in such positions that when the power lines are installed the wires will be close to the telephone wires or pass through them.

As grounds for asking the injunction, the telephone company further claims that the Rural Power Co., started installation of its power lines a week before any application for franchise was made and that the installation is made without authority from the board of supervisors.

Michigan Commission Orders Appraisal of Citizens Company.

An appraisal of the property of the Citizens Telephone Co., of Grand Rapids, Mich., to determine a fair valuation upon which to base rates in cities served by both the Michigan State and Citizens companies, after the merger of the two services, was ordered by the Michigan Public Utilities Commission on October 4.

The order will bring about, in effect, a continuation of plans announced by the commission some time ago, halted by litigation when the Michigan State company objected to an appraisal and asked that the proposed purchase price of the Citizens company be used as a base. The commission was unwilling to take the purchase price of the merged company as a supplement to the extensive audit and appraisal of Michigan Bell property.

It is understood an agreement has been reached whereby the appraisal will proceed and upon its conclusion approval of the merger and the establishment of rates in cities affected, will be issued.

Relief from Oppressive Taxation for Missouri Companies.

On recommendation of the Missouri board of equalization, the tax commission has reduced the valuation for taxation of telephone companies in Missouri generally and some small railroads, it was stated recently by Attorney General Jesse W. Barrett.

It was found that the franchise values of the telephone companies and the small railroad lines had been overestimated by the commission.

A large reduction was made in the valuation of the American Telephone & Telegraph Co., the tax commission having discovered that data on which it based its original report were erroneous.

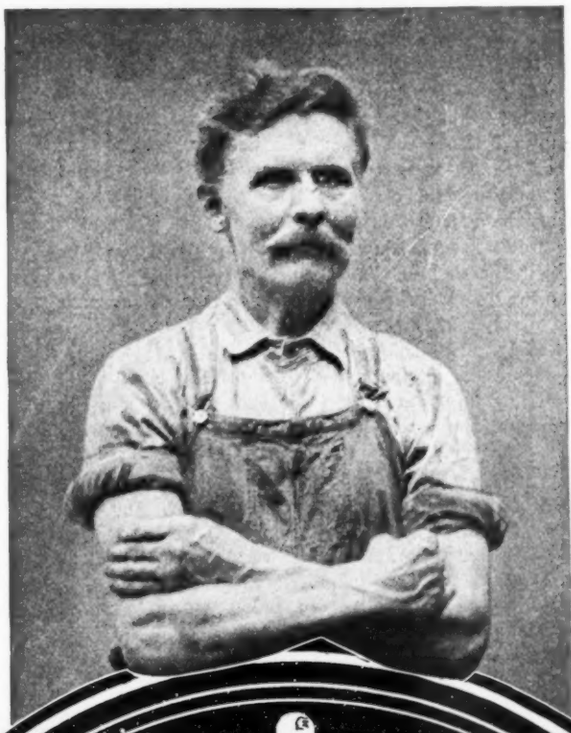
The assessment was reduced to about half of that recommended by the commission—in round numbers from $4,600,000 to $2,600,000.

Evidence Taking Concluded in New York Rate Case.

Taking of evidence in the public service commission's inquiry into the rates of the New York Telephone Co., which were increased in 1919 and 1920, was concluded before Public Service Commissioner Charles G. Blakeslee October 11. Oral arguments will be made on October 25 and October 26 before the commission, and after the filing of briefs, the fixation of future rates for telephone service in Greater New York and in the upstate area will be determined by the commission. The decision, it is expected, will be rendered within six weeks after the filing of briefs.

The commission's inquiry as to the reasonableness of the present rates charged has included two proceedings, one covering the rates charged in Greater New York, which had been pending before the former public service commission since 1919, and another proceeding covering the entire state, begun by the present commission in November, 1921. The two inquiries have proceeded together, the state being represented by Attorney General Newton, under authority of an act of the legislature, signed by Governor Miller last winter, and New York City by Assistant Corporation Counsel M. Maldwin Fertig. Some 30 other corporation counsels, representing cities of the state, have appeared at various hearings.

The commission's decision will cover the complaints of 135 municipalities, made before the present public service commission came into office and following the rate increases in 1919 and 1920, and under it reasonable rates will be determined in every exchange district. Municipalities which complained over the rates, as provided by the legislature of last winter, have been represented by the attorney gen-



What a prestige there is back of the name "Klein"!

And no wonder! Only the finest quality of materials, the finest of workmanship, the most rigid manufacturing specifications, the most careful inspection, is permitted!

Any "old-timer" knows what the Klein trademark means on linemen's tools! Follow their lead and we know you will buy "Klein's."

The quality in Klein Pliers did not just happen! Many are the old employes that for years have been safeguarding in the forging, tempering and inspecting departments, the prestige of the name "Klein." Mr. F. Bauman is one of the old-timers. A few weeks ago he rounded out his *first* 50 years with Klein!

Mathias KLEIN & Sons

Established 1857 — Chicago Ill USA

eral, and the expense of securing expert testimony has been borne by the state.

The present commission's inquiry has relieved cities, towns and villages of any expense in connection with future rates to be charged by the telephone company. Had rates been determined upon each complaint from the 135 municipalities, there would have been expense incurred by the communities interested amounting to hundreds of thousands of dollars.

The hearing on the New York City rates was started in October, 1919. There have been 62 entire days and 10 night sessions devoted to the taking of testimony covering 8,000 pages, while the number of exhibits introduced is 320, not including supplemental exhibits.

The upstate inquiry was started on November 29, 1921, after it had been decided to proceed with a general inquiry rather than on individual hearings on the complaints of municipalities. There have been 61 days devoted to the taking of testimony consisting of 10,200 pages, while the number of exhibits, not including supplemental exhibits, is 400.

Champions of the "Peepul" in Oregon Have Falling Out.

The ranks of the telephone rate reducers in Portland, Ore., are split. Robert G. Duncan, publisher, and W. E. Richardson, attorney, who led a successful fight for the removal of Fred Williams and Fred Buchtel from the Oregon State Public Service Commission in the May primaries because they allowed the Pacific Telephone & Telegraph Co. an increased rate, have fallen out.

It seems that T. M. Kerrigan, who was elected to fill one of the vacancies by Duncan's and Richardson's followers, has not instigated the "housecleaning" in the offices of the commission that his backers proposed should be done. This has resulted in Duncan broadcasting an attack on Kerrigan and also on Richardson, who supports Kerrigan's stand, through a letter sent to newspapers, and which was refused publication by all dailies.

Kerrigan, Duncan's letter intimates, is being favorable to utility corporations, while Richardson is accused of making a "goat" of the telephone company. Mr. Duncan has also taken great pains to state that he has spent $1,700 of his own money in prosecuting the case against the corporation, and that Richardson is "fired" from further duties as attorney.

That Frank Stott Myers, publisher of a paper called the "Producers' Call," the only publication to handle Duncan's letter, is responsible for the breach, was the verbal charge made by Richardson in an interview on October 7.

"Before the election a bunch of the boys had a nice little slate fixed up for the commission," said Richardson. "Duncan was to be secretary and Myers Portland examiner. Duncan even made a speech in which he said, 'to the victor belongs the spoils.' But they couldn't work Kerrigan. He refused to fire all the experienced help. What would Frank Myers know about the job of examiner? That takes an experienced engineer and Myers couldn't get to first base."

In the meantime the case is still hanging fire in the federal court. The recall against Circuit Judge Evans who granted the petition for the removal of the case from the state to federal courts, and which appeared to favor the telephone company, does not seem to be making headway.

A motion to have it remanded back to the circuit court was recently filed, but no hearing has resulted. And there the matter stands.

Mountain States Allowed to Advertise A. T. & T. Stock.

The Utah Securities Commission, after prolonged consideration, decided on September 28 that the plan of the Mountain States Telephone & Telegraph Co. to advertise and urge the purchase of stock in the American Telephone & Telegraph Co. does not bring it under the Utah securities law.

Orson J. Hyde, district commercial manager of the Mountain States company, explained that neither the local company nor its parent concern is selling treasury stock. The plan is simply to encourage telephone users and others in Utah to invest in a public utility stock which, as they view it, is practically a standard stock for investment purposes. Any stock sold in Utah under the plan is purchased on the open market, and does not increase the capital stock issue of the A. T. & T. Co., Mr. Hyde told the commissioners.

The Mountain States began an advertising campaign some time ago, but desisted until the question of the applicability of the state securities law to the situation could be determined.

South Carolina Commission Not Allowed to Enforce Rate Law.

The South Carolina Railroad Commission has no power to enforce the act of the South Carolina legislature dated April 3, 1922, relating to telegraph and telephone rates; such act simply authorizing the commission to furnish information, the legislature itself having fixed the rates in the act.

In the absence of a contract compelling a corporation, though a public service corporation, to perform its services at stipulated and covenated rates, it is entitled to charge such rates as will lead to a fair and reasonable remuneration, and a state has no right to compel it to render services free and to exhaust capital in performing work for the public's benefit.

A state statute fixing rates to be charged by a foreign public service corporation doing business in the state, which are nonremunerative and confiscatory, though not invalid on its face, is unconstitutional unless the foreign corporation is given time and opportunity to cease business and realize on its investment.—Southern Bell Telephone & Telegraph Co. vs. South Carolina Railroad Commission; United States District Court; 280 Federal, 901.

Bell in Washington Withdraws Local Exchange Rate Increase.

Pacific Telephone & Telegraph Co. officials, through James T. Shaw, of San Francisco, general counsel for the corporation, have filed at Olympia, Wash., a notice withdrawing the proposed increase in exchange rates in all cities in the state of Washington except Seattle, Tacoma and Spokane.

In addition, the company filed a revised toll rate schedule which, it is declared, would provide about the same amount of revenue as that expected to result from the increase in local exchange rates in the smaller cities of the state.

"The department of public works surprised us by bringing the question of toll rates into the present controversy," said Mr. Shaw, in discussing the move of his company and circumstances which brought it about. "So we have retorted with a new schedule of toll rates slightly higher than the pre-war tolls and which would raise approximately the same revenue provided in our canceled increases for smaller telephone exchanges.

"We must have more revenue and as long as the question of tolls has come into the matter, we plan to make our fight along those lines."

A survey to determine valuation figures of the telephone company will be pressed by public officials of the three cities involved in the new issue of rates in the state. The Seattle public utilities department already has an expert engaged in this work.

That the move for an increase in rates is merely to offset the demand for a lowering of existing rates is the opinion of Thomas J. L. Kennedy, assistant corporation counsel of Seattle, who is handling the case for the city. A hearing will be held some time in November.

Phantom Toll Circuits Do Not Warrant Standard Rates.

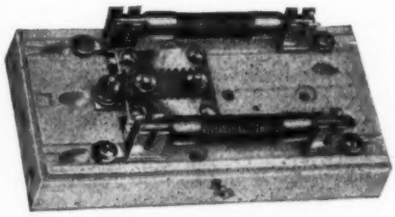
Standard toll rates should not be charged where the service is furnished by a phantom circuit, according to a decision of the Wisconsin Railroad Commission on October 12, when it granted lower rates than those asked in the joint application of the Manawa Telephone Co., of Manawa; Marion & Northern Telephone Co., of Marion; Ogdensburg Telephone Co., of Ogdensburg; and Matteson Telephone Co., of Bear Creek. The rates allowed become effective October 23.

The lines involved are all circuits ob-

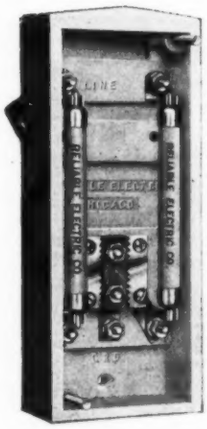
NO INTERRUPTIONS FROM LIGHTNING

No Scramble to Clear Lines at Lightning Arrester
on Telephone Plants 100% Equipped with

SELF-CLEANING SAWTOOTH ARRESTERS



No. 976
City Station
Indoor Mounting



No. 997B
City Station
Outdoor Mounting

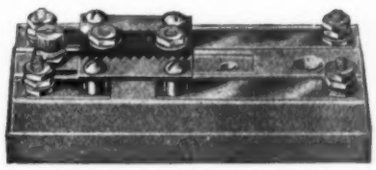
P495
Saw Tooth Discharge Block

All Cable Terminals
All Protector Strips

Type A27 Pole Cable Terminal
Fits Pole—No Gaining
Equipped with P495
Sawtooth Discharge Blocks
Without Extra Charge

Reliable Electric Company
3145 Carroll Avenue
CHICAGO, U. U. A.

National Convention
U. S. Independent
Telephone Association
October 24-27
HOTEL SHERMAN
CHICAGO
Our Exhibit—Room 106



No. 975B
Rural Station
Indoor Mounting

No. 402S
Rural Station
Outdoor Mounting

No. 202
Open Wire Leads

HERE'S A CONCRETE PLAN TO FOLLOW IN ATTAINING THE BENEFITS OF SELF-CLEANING LIGHTNING ARRESTERS

FREEDOM FROM LIGHTNING TROUBLES

tained by phantoming rural lines which are owned by the two companies connected by each circuit. The commission declared that the investment in this type of construction being less than in standard full metallic toll lines, and transmission over the phantom circuit being inferior, standard rates are not warranted. The rates allowed are:

	Station to station.	Person to person.
Between Manawa and Bear Creek	$.05	$0.10
Between Manawa and Marion	.10	.15
Between Manawa and Ogdensburg	.05	.10

Revenues from these rates are to be retained by the company collecting for calls.

Subsidiary Company Not Deprived of Right to Fair Rates.

In a suit to enjoin telephone rates as confiscatory, the fact that the company was owned by another company, from whom or whose subsidiaries it purchased its supplies and rented its equipment, only requires a close scrutiny of the transaction between those two companies to prevent imposition on the community.

The company is not deprived of the right to relief on evidence that the charges made were reasonable and less than the supplies and services could be obtained for from other sources, though the company did not introduce proof as to the profits earned by the holding company.—City of Houston vs. Southwestern Bell Telephone Co.; United States Supreme Court; 42 Supreme Court Reporter, 486.

Unnecessary to Publish Rate Application in Local Paper.

Where a telephone company doing business throughout the state made application to the railroad commission for a general increase of its rates, a publication of the notice of such application in a newspaper of general circulation throughout the state—for the time required by section 3,161 of the 1912 civil code of South Carolina—was sufficient to authorize an increase in rates in a designated town, without publication of the notice in a newspaper of that town.—Miller vs. Southern Bell Telephone & Telegraph Co.; United States Circuit Court of Appeals; 279 Federal, 806.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

October 13: Charles H. Fryer requested the commission to order the Pacific Telephone & Telegraph Co. to install immediately a telephone in his home at 781 Rosemont Road, Oakland.

ILLINOIS.

October 5: Petition filed by Rock River Telephone Co., of Rochelle, for authority to issue first mortgage coupon bonds to the amount of $30,000.

October 9: Application filed by the Kinloch-Bloomington Telephone Co., of Bloomington, for permission to issue $250,000 in 7 per cent preferred stock and $250,000 in bonds; authority also requested to execute a deed of trust to the Continental & Commercial Bank of Chicago to secure the issues.

October 17: Hearing held at Springfield in the matter of proposed advance in rates of LaHarpe Telephone Co. for service in LaHarpe and rural territory. Intervening petition filed by city of LaHarpe and others for an order requiring the company to justify the proposed advance and directing an inventory to be made of the company's property.

October 17: Hearing held at Springfield in the matter of complaint of inductive interference of the lines of Southern Illinois Light & Power Co. with the rural and toll lines of the Commercial Telephone & Telegraph Co. near Carlyle.

October 17: Hearing held at Springfield on the application of the Versailles Telephone Co. for a certificate of convenience and necessity to construct and operate a telephone system in and near Versailles.

October 18: Hearing held at Springfield in the matter of proposed advance in the rates of the Cerro Gordo Telephone Co. for service in Cerro Gordo.

October 18: Hearing held at Springfield on the application of the Illinois Bell Telephone Co. for permission to sell two miles of poles in the village of Oakley to the Cerro Gordo Telephone Co. and to purchase four miles of toll circuit from that company.

October 18: Hearing at Springfield on the petition of the citizens of Stonefort to require the Murphysboro Telephone Co., of Murphysboro, to furnish 24-hour service at Stonefort.

October 18: Hearing at Springfield on the application of the Illinois Bell Telephone Co. for an increase in rates for service in Jacksonville and other municipalities served by the company. Citation order entered requiring the company to show why it is making charges for service not authorized by the commission and for failure to comply with order relative to filing of quarterly accounting statements.

October 19: Hearing at Springfield in the matter of proposed increase in rates of Macoupin County Telephone Co. for service in Carlinville and vicinity.

October 20: Hearing at Salem on the application of the Commercial Telephone & Telegraph Co. for authority to establish increased rates at Aviston, Beckemeyer, Breese, Carlyle, Germantown, Salem, Trenton, Flora, Mt. Carmel and Olney.

MICHIGAN.

October 4: Appraisal of property of Citizens Telephone Co., of Grand Rapids, ordered so that rates incidental to merger with Michigan State Telephone Co. may be determined.

NEBRASKA.

October 9: In the matter of the application of the Hay Springs Telephone Co. for permission to establish a two-party service for which a demand is reported at 25 cents a month less than for individual service, ordered that company be permitted to charge for business two-party, $2.25 a month and for two-party residence, $1.35.

October 10: In the matter of the application of the Northwestern Bell Telephone Co. for permission to discontinue grounded service at its Long Pine exchange, it appearing from the showing that no demand therefor exists, ordered that permission asked for be granted.

October 10: Application of the Lincoln Telephone & Telegraph Co. for permission to discontinue desk set charge of $1.90 a month for residence telephones at sundry exchanges, dismissed of record at request of company.

October 10: In the matter of the application of the Lincoln Telephone & Telegraph Co. for permission to eliminate flat rate for optional service at Benedict and Stromsburg exchanges, permission to company to withdraw granted and dismissed of record.

October 11: In the matter of the application of the Farmers Independent Telephone Co. of Red Cloud, to discontinue collection of gross rental charge; it appearing that this is a competitive point and the commission having no desire to insist upon the gross and net rate system where the companies do not want it, request held to be reasonable and granted.

October 11: In the matter of the application of the Farmers' Independent Telephone Co., of Red Cloud, for validation of certain charges which it has been making for services without authority, found to be reasonable and the company authorized to make these charges: Extension, business, $1.25, and residence, 50 cents; answering sets, 50 cents; extension horns, 50 cents; extension bells and arms, 25 cents.

NORTH DAKOTA.

October 9: Application filed by First National Bank of Fingal to sell and mortgage the property of the Fingal Telephone Co.

October 10: Complaint filed by G. S. Frye and others regarding the service of the Farmers Mutual Telephone Co., of Lunds Valley.

October 11: Hearing held at Tioga on application of Tioga Farmers Telephone Co. for increased switching rates.

PENNSYLVANIA.

October 5: Schedule of new rates, effective November 1, filed by Perry County Telephone & Telegraph Co., which furnishes service in Perry, Dauphin and Juniata counties. The schedule adds a penalty of 10 per cent to bills not paid by the 20th of the month and revises the free service areas. Provision is also made for a charge of five cents on calls within borough limits by non-subscribers. Toll rates are provided between East Waterford and all other points.

October 5: New tariff filed by Pfoutz Valley Telephone Co., which furnishes service in the borough of Liverpool and various townships in Perry and Juniata counties. A penalty of 10 per cent is added to bills not paid by the 20th of the month and the free service areas are revised.

WISCONSIN.

October 12: Authority to establish certain toll rates given Manawa Telephone Co., of Manawa; Marion & Northern Telephone Co., of Marion; Ogdensburg Telephone Co. of Ogdensburg; and Matteson Telephone Co., of Bear Creek.

October 17: Hearing held at Madison on application of Marion & Northern Telephone Co., of Marion, to increase certain toll rates. U-2783.

October 17: Hearing held at Madison on petition of Lisbon Telephone Co., of Sussex, to increase rates. U-2785.

October 18: Hearing held at Madison on application of Eastern Wisconsin Telephone Co., of Chilton, to increase rates on Plymouth rural lines. U-2786.

October 30: Hearing at Galesville on proposed extensions by Ettrick Telephone Co. in the towns of Ettrick and Gale.

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Personal and Biographical Notes

C. O. Ellswcrth, who has been in charge of the traffic department of the Tri-State Telephone & Telegraph Co. at St. Paul for the past three years, took on new duties with the division of the territory of the Tri-State into districts. He has been made district traffic chief of the eastern district, with headquarters in Rochester.

Mr. Ellsworth has been in the telephone business for 15 years, first with the Bell company and later with the Tri-State.

He was one of those who aided in bringing the public in St. Paul to an understanding of the problems of the telephone industry. He took charge of the traffic department when the newspapers were pounding the telephone game editorially and in the news columns. Things did not look rosy for Mr. Ellsworth, but he smiled and told the world pleasantly that "there was a reason"—several reasons, in fact. Employment conditions had been tied up, for one thing. For another, there was a shortage of trained girls.

Then Mr. Ellsworth took off his coat and went to work. The average speed for answering was 12 seconds; at the present time the average speed in St. Paul is 3.6 seconds. Not only that, but St. Paul stands high among the telephone exchanges of the country in the matter of efficiency—its last official rating being 95 per cent.

W. P. Kimball will take the place of C. O. Ellsworth as district traffic chief of the Tri-State Telephone & Telegraph Co. in St. Paul. Mr. Kimball came to the Tri-State from the Lincoln Telephone & Telegraph Co., Lincoln, Neb., where he was traffic supervisor.

D. M. Neill, of Red Wing, Minn., who has been manager of the Red Wing Telephone Co. since it was founded in 1904, retired from active participation in the affairs of the company on September 30. On that date the Tri-State Telephone & Telephone Co. took over the Red Wing company.

P. H. Finnegan, of Owatonna, Minn., has been named manager of the Red Wing exchange of the Tri-State Telephone & Telegraph Co. under the plan of consolidation with the Red Wing Telephone Co. He will have his office in the quarters of the Red Wing company.

Dr. S. W. Stratton, for 21 years director of the Bureau of Standards, Washington, D. C., was elected president of the Massachusetts Institute of Technology October 11, to succeed Dr. E. F. Nichols who was forced by illness to resign. The new president will assume the position on January 1.

Dr. Stratton was born in Litchfield, Ill., in 1861, and was graduated in 1884 from the University of Illinois, where he later became professor of physics and electrical engineering. From 1892 to 1901 he was with the physics department of the University of Chicago.

As head of the Bureau of Standards he has built up from a small office of weights and measures employing three or four persons a bureau which occupies a dozen buildings and has a staff of more than 900 employes. The bureau is closely aligned with the industries of the country, aiding them in research work and development of precision of method.

During the world war, under Dr. Stratton's direction the bureau inaugurated the domestic furnishing of a supply of optical glass for this country, obviating further dependence upon Germany.

Dr. Stratton has received the honorary degree of doctor of engineering from the University of Illinois and that of doctor of science from the Western University of Pennsylvania, the University of Cambridge and from Yale. He was made a chevalier of the Legion of Honor in 1909.

In the war with Spain he served as a lieutenant in the Navy. During the world war he was a member of the interdepartmental board of the Council of National Defense and of the National Advisory Committee for Aeronautics.

W. A. Kendall, of Omaha, Neb., has been appointed to succeed J. J. Stephens as manager of the Richmond, Mo., exchange, of the Kansas City Long Distance Telephone Co.

Mr. Kendall has had considerable experience in the telephone business and comes well recommended to the Richmond patrons.

L. O. Painter, formerly equipment engineer for the Tri-State Telephone & Telegraph Co., St. Paul, Minn., has been named acting chief engineer to fill a vacancy caused by the resignation of A. J. Seymour, chief engineer, according to an announcement issued October 10 by Geo. K. Gann, general superintendent. Mr. Painter assumed his new duties October 16.

A. J. Seymour, of St. Paul, Minn., has resigned as chief engineer of the Tri-State Telephone & Telegraph Co., but for the present is attached to the staff of the general superintendent as consulting engineer.

Obituary.

William Farrell, for 20 years president of the British Columbia Telephone Co., Vancouver, B. C., died on September 12.

To the business aggressiveness and wise judgment of Mr. Farrell is credited the development of the British Columbia Telephone Co. from a small company to its present capacity of furnishing service throughout the southern part of the province. The company was organized in 1903, amalgamating several local companies, some of which had been in existence for about 20 years. One of them, the Victoria company, had been organized in 1880, four years after the invention of the telephone.

Mr. Farrell gave particular attention to establishing a satisfactory connection between Vancouver Island and the mainland, accomplishing this in 1912 when a new submarine cable was laid, reaching from Vancouver direct to Nanaimo. Several of his extension projects in other directions are under way at the present time.

He arrived in Vancouver in 1893 as manager of the Yorkshire Guarantee & Securities Co., and a short time after that he became financially interested in the telephone company. During the time that the Yorkshire company was receiver for the British Columbia Electric Railway, Mr. Farrell managed the affairs of the transportation company. Later, he resigned from the Yorkshire company and entered the cannery and fish brokerage business. Thus, he acquired a broad knowledge of local conditions.

While supplying telephone service to British Columbia was Mr. Farrell's greatest work, he was interested in several other large business enterprises. When a new company took over a local shipping and wharfage firm, he was its president. He was also associated with other concerns intimately connected with development. In the Victory Loan campaigns during the war period, Mr. Farrell was chairman for British Columbia of one of the provincial war loan companies. When a civic center for Vancouver was discussed, he offered a prize for the best plan.

Mr. Farrell was born in Devonshire, England, spent some of his early life in Ireland, and had extensive business experience in England. Immediately prior to going to Vancouver he was surveyor of taxes in Huddersfield. His last visit to England was in 1912, when he spent several months there.

Surviving Mr. Farrell are his wife, three daughters and a son, Gordon Farrell, secretary-treasurer of the British Columbia Telephone Co.

E. L. Hammond, of Somerset, Ohio, general manager of the Perry County Telephone Co., died at his home on August 21. He had sustained a fractured skull in an automobile accident a few days previous to his death.

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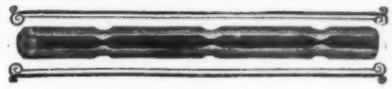

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With "Information" in Kansas City

New 20-Position Information Desk in Kansas City Telephone Building Handles Information Requests of the Unified System — Eight Revolving Stands Accessible to All Information Operators Solves Traffic Congestion Problem

With the unification of the Home and Bell systems in Kansas City, Mo., came so great a congestion in the information department that it was necessary to formulate a new method for handling the increased traffic. Just how this was done is told in an engaging manner by C. S. Jennings and Elizabeth Wagner in a recent issue of the "Pilot Light," the organ of the Kansas City company's employes. The article possesses such an interest and expounds the details so clearly that TELEPHONY publishes it in its entirety:

The Home information system of six positions, with an operating force of 15, was located at Harrison central office. This board served all Home offices with the exception of Hyde Park and Drexel. These two offices were provided with duplicate records and a two-position board with two operators.

Specially printed directories were used, with blank space left on each sheet for the entry of installations and changes made after directory issue. The numerical cards were maintained at the Harrison information desk and the address records were kept by the K. C. L. D. office for the use of the entire system. Two clerks were also required on the Home to handle the information records.

Up until January 29, 1921, the Bell centralized information board of ten positions, with an operating force of 25, was located in the Grand Central office.

Regular telephone directories were used, filed in binders with blank interleaves inserted to care for the listings of installations and changes which were made after the issue of the directory. Each position was furnished with a binder containing the entire alphabet.

The numerical and street address record in card form were maintained at a specially built desk which was equipped with a group of trunks terminating at the information desk. These trunks were multipled so that they were accessible to every operator. Two clerks were required to keep directory and numerical records up to date, working an average number of one hundred orders a day.

In line with the plans for a unified centralized information, a standard flat top, low turret, 20-position information board was installed on the fourth floor of the new telephone building. The trunks are key-ending, the keys being mounted in a trough so that they will not be accidentally opened or closed when using any portable records.

There are 10 positions on each side of the board and at the time of installation, a book rack mounted on the turret in the center, extended the entire length of the board and was arranged to make the book records accessible from either side.

An interleaved directory was used which worked out to a good advantage, effecting quite a saving. The numerical records were placed in book form, and due to the fact that these records had been maintained on cards, this proved to be quite an undertaking.

It was decided to continue the use of the street address records of each system as they were, as this information was kept for use only by long distance and the different departments of the telephone company and it was felt that it might be possible later to discontinue its use altogether.

With the information records assembled on one centralized desk, it was thought that the combined information force of 41 people would be sufficient, but it was found necessary to increase the force to 50, and as the unification of central offices progressed and entries of installa-

This Is How the Kansas City Telephone Co. Revised Its Information Department to Take Care of the Increased Traffic Incidental to the Merger Between the Home and the Bell Systems.

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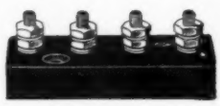

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GUND'S High Tension Guy Clamp

is built on a principle that makes it the most powerful of guy clamps. The body is split into two halves and fitted over the guy wire. Outside of clamp has a tapered thread as has also the nut. When the nut is screwed up, the clamping power afforded is ten times as great as that of ordinary clamps. It will hold until the guy wire breaks —and then some.

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tions and changes were to be made in both Home and Bell directories, the clerical force was also increased until finally 10 clerks were making entries.

It was evident that some means of maintaining records must be devised in order to handle the traffic which, due to the further unification, was rapidly increasing.

Finally, the system now in use was devised. It consists of eight revolving stands which are placed in the center of the desk, and operators have access to stands in front or to either side of them.

These stands hold swinging metal leaves on which are filed alphabetically all listings in celluloid tubes that were formerly entered in the regular directory which, after unification, caused the binder to be so large that it became necessary to divide it into two sections.

These stands have quite a number of advantages over the former book system, namely:

The elimination of interleaves in directories, thereby making it possible to place the entire alphabet in one binder.

Elimination of longhand entries which at times became almost illegible—entries are now typewritten and placed in celluloid tubes.

The strictly alphabetical arrangement of listings which was impossible before.

Suburban listings are placed on the stands in green tubes, thereby making it possible to discontinue the practice of looking through all of the different suburban listings before giving out a "Nothing listed" report.

Accuracy—one copy is typed and enough copies for all stands run off on the Ditto machine, while under the book system sometimes as many as 10 people made longhand entries.

Listings are now placed on stands at 11:00 a. m., 3 p. m. and 5 p. m., while under the book system an average interval of 24 hours elapsed between completion of order and time of entry on information records.

Saving of time of operators—an operator is enabled to locate information much easier and quicker, due to the alphabetical arrangement and the fact that it is typewritten. Fifty calls per hour was considered a good load for an operator under the former system. The present average is 65 calls per hour.

During the time that these stands were being completed, traffic became so heavy owing to subscribers not yet having unified directory, that it became necessary to re-open the former information department at the Grand exchange. This department opened October 31, 1921, with a force of 25 operators, and took care of the information calls of the downtown district—Main, Grand and Harrison.

The new unified directory was issued during the month of January, enabling the temporary information department to close and the operators to return to the new office, February 9.

The present system—which is the one of the Acme Card System Co., 6 North Michigan Ave., Chicago—is very satisfactory, and even with the increase in traffic due to the steadily increasing growth of Kansas City, the company expects to meet the requirements of the public for some time to come.

McBerty Now Head of North Company

Well Known Engineer and Inventor President of North Electric Mfg. Co.—Record of Many Years Shows Continuous Activity in Developing More Efficient and Economical Manual, Automatic and Semi-Automatic Equipment

One of the busiest men in the manufacturing end of the telephone field is F. R. McBerty—familiarly known as "Donnegal"—who recently became president of the North Electric Mfg. Co., Galion, Ohio.

He has a long and varied list of telephone inventions to his credit, has designed and engineered many large electrical jobs, and has prepared several technical papers of merit. In recognition of his inventions, Mr. McBerty has received a number of diplomas and medals—among them one from the Paris international exposition of 1900 and one from the Lyons exposition of 1916.

Probably, to alleviate curiosity, the story of Mr. McBerty's nickname should come before the details of his career. This is how he acquired it:

During a carnival in Oxford, England, an Irish peddler who was selling "funmakers" urged Mr. McBerty to purchase one "for the sake of the Old Sod."

"You are mistaken; I do not come from the Old Sod," said Mr. McBerty, as he paid for the trifle, "nor from within thousands of miles of there."

Surveying Mr. McBerty with a quizzical expression in his eyes, the Irishman observed, "Well, ye bought me whisk and ye are a gintleman and a gintleman wouldn't lie, and faith I don't know what is the matter wid your speech but there's only wan place on God's footstool where they make thim faces—and that's up in Donnegal." "F. R's." grandfather came from Donnegal.

Somehow or other, the story broadcast itself and Mr. McBerty became known among his American and European friends as "Donnegal."

It is natural that Mr. McBerty should lean toward engineering work, as all his living male relatives are engineers. But as an inventor, he has gone a long distance on his own impetus.

He says he became interested in telephony at about the time telephones and he began to exist. When he was a young man he made and sold some telephones that worked well, but was warned by the Bell interests that he must respect their patents and stop selling telephones. He figured that that warning rather pointed the way to opportunity and a few years later he entered the employ of the Western Electric Co., of Chicago, with which company he remained for 30 years.

Soon after joining the forces of the Western Electric organization, Mr. McBerty became active in the laboratory and was placed in charge of the laboratory and of the drafting room. By easy transition, his field was extended to include the development work, patents and patent litigation, equipment planning—which the Western Electric was doing for the Bell licensees—supervision of new design processes and materials, and inspection of product.

He assisted in making the layout of the Western Electric bridging system with self-restoring drops, and later had charge of the development and equipment planning of the common battery system.

Among the patents taken out by Mr. McBerty while engaged in the development work were those covering relays, keys, jacks, plugs, cords, lamps, lamp fixtures and many of the circuits of the common battery system, as well as meters, coin boxes, selective ringing party-line apparatus and lockouts.

In connection with the common battery system he worked out the low current switchboard lamps—which remain substantially the same today—the processes and machines for their manufacture, including filament making, vacuum pumping and glass blowing machines, besides planning and operating the first factories for making the lamps.

Later, as the use of fine silk-covered wire imposed costs and difficulties of production which hampered development, he initiated and controlled the working out of the enamel coated wire and the machinery and plant for making it.

The steel tape switchboard cord was the outcome of a boast which Mr. McBerty made to S. G. McMeen, then chief engineer of the Central Union Telephone Co., that the costs and faults of any piece of

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Linemen like the new Turner "Hot Spot" Master Torch. Its long, clean, hot, blue flame makes their work easy. For it's a flame that won't blow out in a gale. And the torch defies zero weather.

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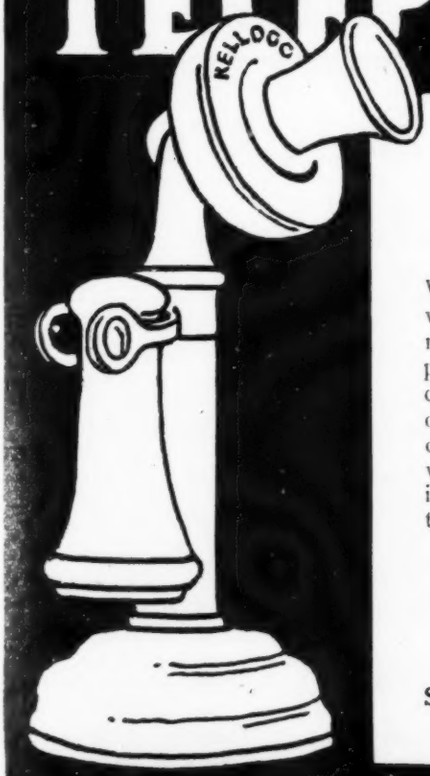

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apparatus existing at that time could be cut in half by a little careful study and thought. Regarding this invention, Mr. McBerty remarks, "Mr. McMeen, always alert to puncture a bluff, called it and I had to produce the cord."

Considerable research was carried on under the direction of Mr. McBerty, including the standardization of transmitters, the mode of operation of carbon transmitters, tranmisssion tests, determination of causes and the measurement of losses in telephonic transmission, the study of physical characteristics of loaded lines and loading coils, and the development of the telephonic repeater and its application to loaded lines.

His attention has by preference been centered upon automatic apparatus and while still in school he devised a primitive automatic exchange. In about 1900, in the laboratories of the Western Electric, he produced a complete working automatic exchange.

He took a leading part in perfecting the Western Electric's mechanical switching apparatus—producing in 1908 a power driven machine-switching system, which involved the principles of operation which have since become characteristic of that company's systems.

In 1911, Mr. McBerty took charge of the designing, manufacture and sale in Europe of Western Electric machine-switching systems, a business which continuously expanded up to and during the early part of the war. During this time he put through several semi-automatic and full automatic installations of the "McBerty power driven machine-switching type" in Europe and Australasia.

Mr. McBerty became interested in the North Electric Co. in 1917, which was then being reorganized after receivership, with a view to creating a company active in perfecting and manufacturing automatic machine-switching equipments. He had an important part in shaping the company's

F. R. McBerty, President of North Electric Mfg. Co., Comes From a Family of Inventors and Engineers.

contributions to this field—in the production of the dial controlled system, the remote controlled satellite or community exchange system and the all-relay exchange equipments.

His "society connections" are those of the "first families" type in the electrical world. He was one of the organizers of and contributors to the Chicago Electric Association, which ultimately was absorbed by the Western Society of Engineers. He is a fellow of the American Institute of Electrical Engineers, a member of the British Institution of Electrical Engineers, American Electro-Chemical Society, Union League Club of Chicago, American Chamber of Commerce in London, and of various golf, yacht, automobile and other clubs where, he states frankly, he does not yacht, automobile or play golf. His favorite amusement is pushing forward machine switching.

Mr. McBerty is also director and technical advisor of Coventry Automatic Telephones, Ltd., Coventry, England.

At various times he has presented papers covering studies of divers subjects—such as the nature of commutation reactions in dynamos; the effect of impurities in arc light carbons and the cause of hissing and fluctuations of light; the methods of making and using X-ray tubes, the source of the ray, and some observations on X-ray phenomena; the mode of operation of carbon transmitters; and, of more recent date, a paper on machine-switching telephone gear before the British Institution, which received the Fahie prize.

For some men a record like that would be a temptation to "rest on their laurels," but resting is the farthest thing from Mr. McBerty's make-up. He is pleased with his achievement in building up the North Electric Mfg. Co. but has a vision which takes him far into the future and shows more work and more accomplishment ahead.

From Factory and Salesroom

Convention: Missouri, Jefferson City, November 15-16.

The Multiple Magneto Switchboards of the Leich Electric Co.

The ingenuity and special care used in the design of the Leich magneto multiple switchboard has produced a switchboard that is said to be really a solution of the three and four-position size magneto exchange.

In the Leich magneto multiple system the lines are multipled within reach of all operators; each line is protected by a busy signal; any operator may answer any call on the board and restore the signal, and the instant the plug is inserted answer the call.

There need be no idle operators on this type of switchboard. The service in general is improved, it is stated, and operating costs reduced because less operator hours are required to do the work.

The Leich magneto multiple switchboard is, therefore, claimed to be the real solution to the three and four-position exchanges.

Compound for Protecting Underground and Aerial Cable.

It has become known that cable laid underground without conduit is sooner or later more or less liable to be affected for a few inches or perhaps several hundred feet by chemical action or depredations by rats.

Many things, that may cause corrosion and deterioration of the sheath by chemical action, may occur. Waste from ice plants, gas plants, stockyards, stables, toilets, manure piles, cinders, blacksmith shops, attack the sheath. Decay of different wood in the earth may cause the same results. Oftentimes filled-in earth has properties that attack the sheath of cable. Alkali conditions in some Southwestern states are harmful to cable sheath.

Rats often eat off cable sheath along elevators, cribs, etc. Other things may affect cable.

Ever-Protect cable compound, is claimed to provide perfect insulation, and prevent chemical action and also eliminate electrolysis to a great degree. Its manufacturer states that it prevents corrosion and deterioration of the cable sheath by chemical action, depredation by rats and dampness from defective cable sheath or defective wiping of joints.

It is flexible and not affected by extremes of hot and cold weather. Good cementing qualitites provide for adhesiveness to the cable. Open joints in aerial cable coated with Ever-Protect cable compound will be unaffected by dampness, it is said.

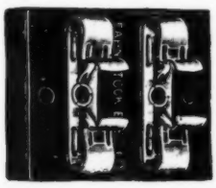
OLD PALS

FAHNESTOCK CONNECTORS—fine for test connections or for attaching drop wires to the main line.

DETROIT CONNECTING BLOCK—two double binding posts mounted on durable composition base.

Interesting catalogs and price lists for you. Send for them.

FAHNESTOCK ELECTRIC CO.
LONG ISLAND CITY NEW YORK



The Handyman POLE PUSHER

A mechanical pike pole with the pushing capacity of at least ten men. Straightens leaning poles—takes slack out of wires on corners—moves a pole through a trench on resetting—holds a pole straight when pulling—in fact, it will save time and back straining labor everywhere the ordinary pike pole is used. Light enough for one man to carry and operate. Capacity—6000 lbs.

Write for prices.

HARRAH MFG. CO.
BLOOMFIELD, INDIANA

Visit Our Exhibit at Booth 9, Crystal Room, Hotel Sherman

CONDENSERS

Mansbridge Type Condensers are Self-Sealing and cannot be internally short-circuited. If one is broken down by a lightning or high-tension discharge, or by mechanical damage, it automatically and instantaneously seals up, this being the unique and characteristic property of the metallized paper.

You can drive a pin right through a Mansbridge Condenser and the capacity and insulation will still be O. K.! Sounds impossible, but it's solid fact!

Complete Satisfaction

That's the reason why the Mansbridge Condenser has made good.

Mansbridge Condensers are More Reliable, Lighter, Smaller and no more Costly than those of the old fashioned solid foil type.

They are made under license by Western Electric Company, Ericsson Mfg. Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Co., and by numerous other licensees all over the world.

Insist upon having MANSBRIDGE CONDENSERS.

For full particulars and for terms of manufacturing license in U. S. A. and Canada apply:

G.F. MANSBRIDGE

Mount House, New Barnet, England

The National Cable Hanger

IT'S a happy construction that results from the use of the National Cable Hanger. "Happy" because it's a strong construction, economical and "good to look at."

The National is put up in compact rolls and installed without tools.

A postal will bring you samples and data.

National Pipe & Cable Hanger Co.
137 East 43d St. New York, N. Y.

"Patented June 29, 1915"

Through use of this compound cable troubles are declared eliminated and maintenance expenses or costs reduced. Due to its lasting qualities, the compound will last longer, it is stated, than lead cable underground.

Ever-Protect cable compound, the manufacturer says, enables companies to give and maintain an adequate service at a price the public can afford to pay and which will net a fair and reasonable return on the investment.

Complete information regarding Ever-Protect cable compound and its uses may be obtained upon application to its manufacturer, the National Cable Compound Co., Mitchell, Ind.

Page & Hill Co. Had Good Exhibit at Illinois Convention.

Among the exhibitors at the annual convention of the Illinois Telephone Association in Peoria October 3, 4 and 5, was the Page & Hill Co., of Minneapolis, Minn. This company had an orderly arranged display and one which proved of much interest to the visitors.

The photograph reproduced on this page was taken when R. Blaisdell, of the Fairbury Telephone Co., Fairbury, Ill., was having explained to him by S. G. Harris, of the Page & Hill Co., the mysteries of the increment borer.

In accordance with a stipulation of the Page & Hill Co. on its orders for poles butt-treated with its guaranteed penetration process, a test must be made to determine the penetration result. This is done by taking frequent tests

They Are Discussing Pole Preservation Methods.

with the increment borer—a plug being removed from the three-foot guaranteed area at a point one foot below the standard ground line. The hole from which the plug is removed is then sealed with creosote, after which a creosoted plug is driven in tight. This, it is said, gives an accurate check on the depth to which the preservative has penetrated.

The depth of penetration must be one-half inch throughout the guaranteed area—unless the thickness of the sapwood is less than one-half inch, in which case the impregnation is to the full depth of the sapwood.

This is the story of one step in the butt-treating process which Mr. Harris is telling to Mr. Blaisdell.

Ringing Equipment for Magneto Telephone Exchanges.

The day is past when anything but the most reliable ringing equipment will be tolerated in telephone exchanges. The tendency, too, is to get away from the use of wet or dry batteries for the switchboard transmitters.

If power ringing machines operate directly from the lighting circuit, there are the interruptions of the current to contend with, and in very busy exchanges auxiliary equipment must be maintained for emergency use. It is logical to assume that an efficient storage battery would eliminate the power interruptions and furnish current for operators' transmitters. How to charge the storage battery has always been the great problem.

The Leich vibrating rectifier combined ringing and charging machine has been developed for just such a purpose and provides both the charging and ringing on the machine.

The late improved rectifier overcomes variation in voltage and frequency of power circuits and the relay lock guards against power interruptions. The reliability is established. The expense of operation is negligible and the first cost is within reach of all exchanges.

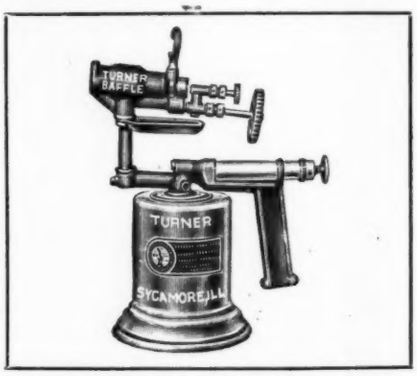
The "Master" Line of Blowtorches of Turner Brass Works.

The Turner Brass Works, of Sycamore, Ill., torch makers for over half a century, announce a new line called the "Master Line" of torches.

These blowtorches have many distinctive features. A vaporizing baffle in the combustion chamber, which the makers call the "hot spot hump," is one of these features. This baffle soon becomes white hot under the impact of the flame and the intense heat developed instantly vaporizes kerosene or other low grade fuel as it is pumped through the canal in the interior of this baffle. The rich, clean, dry gas developed generates great heat.

Another feature is the use of a supplementary needle valve for controlling the flow of gas in connection with a flared air inlet. These are so placed as to insure the maximum and mixture of air—another element in the intense heat developed by this torch.

The pump which is placed horizontally above the tank has a unique feature in what is called the parachute principle pump leather. This flares out on the work stroke and contracts on the return stroke



One of the "Master" Line of Blowtorches.

and is continuously lubricated by a small reservoir of vaseline contained in an angular groove at the bottom of the plunger.

Another feature is the Turner safety valve and air release—a feature which will commend itself to every man experienced in the use of a torch. The makers stress the fact that the "Master" line of torches has but one opening in the tank. The pistol grip also commends itself to men who have to use torches continuously, as it is a restful grip.

All these points are covered by patents and are exclusive with the Turner people. Many of the exclusive points of the "Master" line of torches are also found on the company's new line of furnaces.

Convention Visitors Invited to KYW Broadcasting Station.

The Illinois Electric Co., through the courtesy of the Westinghouse Electric & Mfg. Co., extends an invitation to convention visitors in Chicago next week to visit the KYW broadcasting station.

Parties will be personally conducted by representatives of the Illinois Electric Co., who will arrange with those interested upon application to J. B. Haley, the company's radio and telephone specialist. Mr. Haley will be in attendance at the convention.

Wants Bid on Surplus Telephone and Telegraph Material.

The general supply depot of the United States Signal Corps at Chicago has a surplus of telephone and telegraph parts which it wishes to sell. The material can be seen at the depot, 1819 West 39th Street, Chicago, or a list will be furnished to any interested parties. Bids are solicited.

Captain T. D. Bowman, of the Signal Corps, states that the majority of the telephone parts can be used to good advantage by rebuilt telephone companies, as the quantities are not large enough for other buyers. Among the items that are to be disposed are:

Exide
BATTERIES

The fundamental value of Exide Batteries in the telephone field has been proven ever since the central energy system was established over 25 years ago. Today, the Exide is as modern in construction and design as the latest practical innovation in telephony; a fact attested by its almost universal use.

THE ELECTRIC STORAGE BATTERY CO.

Oldest and largest manufacturers in the world of storage batteries for every purpose

1888 PHILADELPHIA 1922

Branches in 17 Cities
Exide Batteries of Canada, Limited, 133-157 Dufferin St . Toronto, Canada

"COPPERWELD" TELEPHONE WIRE

TRADE MARK REG. U.S. PAT. OFF.

MADE BY THE MOLTEN-WELDING PROCESS

Where No. 10 hard-drawn copper or No. 12 BB Galvanized iron telephone wire would be used, a No. 12 Copperweld Telephone Wire may be properly selected. This is shown by the following comparison of characteristics:

	Diam.	Breaking Weight	Weight per Mile	Relative Factor of Safety: With 8 lb. Wind	Relative Factor of Safety: With ½" Ice and Pressure	Relative Factor of Safety: With 15 lb. Wind Pressure. No Ice.
10 B&S hard-drawn Copper	.102"	528 lb.	166 lb.		98%	80%
12 BWG BB Galvanized Iron	.109"	476 "	170 "		88%	68%
12 B&S Copperweld	.081"	520 "	96 "		100%	100%

The speech transmission of Copperweld is approximately two and one-half times that of galvanized wire of the same size.

COPPER CLAD STEEL COMPANY, Braddock P. O., Rankin, Pa.

See Our Exhibit at Stromberg-Carlson Tel. Mfg. Co. Booth and the Kellogg Switchboard & Supply Co. Booth

RUBBER TRADE RIMCO MARK PRODUCTS
REG. U. S. PAT. OFF.

The "Rimco" Rubber Insulated plier is "Different". It will not only give the hard, practical service the lineman requires, but the insulating compound is of such a character that it is semi-soft, not hard like the average insulated plier offered to the trade —a type impractical for rough usage.

The bond of uniting the rubber compound, known as the Elchemco process and covered by American and foreign patents, is not to be confused with slip-on handles of semi-soft rubber and impractical methods of attachment to handles of insulated pliers.

Every pair tested and passed for 10,000 volts by the Electrical Testing Laboratories of New York City.

Literature and prices on request.

"RIMCO" Rubber Insulated PLIERS

Sizes 6, 7, 8 and 9 in.

RUBBER INSULATED METALS CORPORATION
50 Church St., New York City, U. S. A.

Distributors—Stromberg-Carlson Tel. Mfg. Co., Kellogg Switchboard & Supply Co.
Export Distributor, International Western Electric Co.

CHAPMAN ARRESTERS

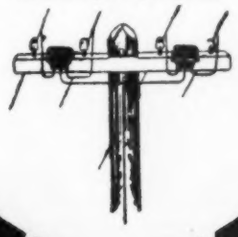
Chapman Lightning Arresters

Have no vacuum to lose, neither do they contain anything to melt, fuse or ground the line.

The patented self-cleaning air gap is housed in a marvelous weatherproof case, that is moisture, dust and bug-proof, a combination that insures uninterrupted service without attention—and that constitutes the "makings" of a real Lightning Arrester.

Manufactured by

MINNESOTA ELECTRIC CO.
Minneapolis, Minn.

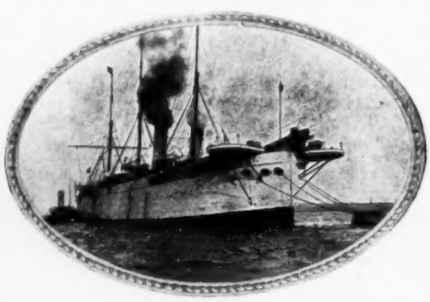


Eight operating tables, Western Electric No. 1-A; four distributing tables, Western Electric No. 2-A; and four test tables, Western Electric No. 1-B.

These are part of multiplex telegraph sets. They are new, have never been used, and were received from the Western Electric Co. in 1919, having been stored at the depot since that time. All the surplus material is being sold "as is" and "where is."

Siemens Brothers & Co.'s New Cable Ship Ready Next Year.

After nearly half a century's arduous work in connection with the laying and repairing of submarine cables in all parts of the world, the well-known cable ship "Faraday" of Siemens Brothers & Co.,



Cable Ship "Faraday," Which Has Laid 50,000 Miles of Submarine Cable.

Ltd., Woolwich, England, is shortly to be replaced by a new cable-laying steamer.

Although still capable of performing her duties in a trustworthy and creditable manner, the good old vessel was gradually becoming obsolete in various ways, and in order to meet the anticipated increase in cable-laying during coming years, the company decided to build a new ship designed on the most modern lines and complete in every respect.

The order has been placed with Palmer's Shipbuilding & Iron Co., Ltd., Hebburn-on-Tyne. The new vessel, which will be ready for work early next year, will be of steel, 380 feet long, 48 feet wide, and the depth to the upper deck will be 29 feet 3 inches. The approximate dead weight will be 6,700 tons. The ship will have twin screws and will be driven by triple expansion engines; and sufficient oil fuel can be carried to give a steaming range of about 10,000 miles. There will be four cable tanks capable of carrying approximately 4,350 tons of cable.

It may be of interest to recall here a few leading particulars relating to the cable ship "Faraday." This vessel is of iron and was built by Charles Mitchell & Co., Low Walker-on-Tyne, being launched in 1874. Her length is 360 feet 4 inches, breadth 52 feet 3 inches, depth of hold 34 feet 7 inches, gross tonnage 5,028 and the net tonnage 2,934. She is propelled by means of twin screws, each of which is driven by a compound engine of a nominal horse-power of 500, the condensers being of the surface type.

There are three cable tanks in the ship, two of which have a capacity of 47,712 cubic feet each, and the other having a capacity of 22,500 cubic feet.

Altogether the "Faraday" has laid some 50,000 miles of submarine cable in all parts of the world, including eight submarine cables across the Atlantic. She has also been employed for carrying out many repairs to Atlantic cables in deep water up to depths of 3,000 fathoms.

A list of some of the principal cables laid by the "Faraday" is as follows: Direct United States Cable Co. (Atlantic cable), 1874; Cie francaise du Telegraphe de Paris à New York (Atlantic cable), 1879; Western Union Telegraph Co. N. cable (Atlantic cable), 1881; Western Union Telegraph Co. S. cable (Atlantic cable), 1882; Commercial Cable Co. N. cable (Atlantic cable), 1884; Commercial Cable Co. S. cable (Atlantic cable), 1884; Mexican Telegraph Co. (coast cables), 1889 and 1905; Commercial Cable Co. (Atlantic cable), 1894; Amazon Telegraph Co. (river cable), 1895-96; West India & Panama Telegraph Co. (inter-island cable), 1898; Commercial Cable Co. (Atlantic cable), 1900; Commercial Cable Co. (Atlantic cable), 1901; Central & South American Telegraph Co. (Valparaiso to Chorrillos), 1906; Commercial Pacific Cable Co. (Guam to Bonin), 1906; post office telegraph cable (Newbiggin-Arendal), 1910; Dutch Colonial cable (East Indies), 1913; Great Northern Telegraph Co. (Newbiggin-Sondervig), 1913; Central & South American Telegraph Co. (Colon to Cartagena), 1920, (Santa Elena to Chorrillos), 1920; All American Cables, Inc. (Cuba to Puerto Rico), 1921.

For Taking Slack Out of Wire—Matthews Slack Puller.

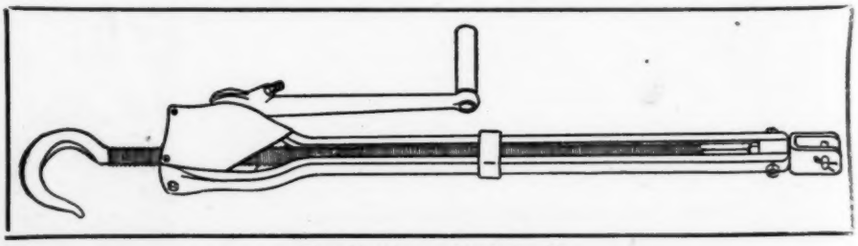
The Matthews slack puller is designed for taking the slack out of wires and guy strand. Its purpose is to supplant the block and tackle in pulling wires, messenger and guy strand into position.

The manufacturers claim that on corners where there are heavy strains which would require four to six men with block and tackle, one man can do the work with a Matthews slack puller. With this device, it is said, no slack is lost in deadening because of the fact that it holds the strain to the exact point to which it has been pulled. It will hook around a pin if desired, and the other end is arranged with a swivel clevis to engage a come-along.

The pulling power is obtained by a combination of miter and worm gears with a long lead screw, on the end of which is a strong drop forged hook. A ratchet handle is furnished, which operates the gearing and the lead screw, and the gears are protected so as to shield them from any danger to the wire or strand.

The tool weighs less than 12 pounds and has a take-up of about 24 inches. It is ruggedly built, to withstand severe service.

W. N. Matthews & Bro., St. Louis, Mo., will be pleased to furnish complete information and prices regarding the slack puller and other tools.



The Matthews Slack Puller.

Non-Tune Rectifiers for Charging Radio-Storage Batteries.

Radio telephony requires the use of storage battereies. So far a 6-volt battery only has been used extensively and this low voltage requires special charging equipment. The Leich Electric Co. has adapted its non-tune railway signal type rectifier for this purpose and is selling a very compact, efficient and reliable charging set.

The vibrating unit is shaft-mounted and the polarized armature is acted upon by the magnetic field produced by both waves of the alternating current. This increases the efficiency and compensates for variation of frequency and voltage of commercial power current.

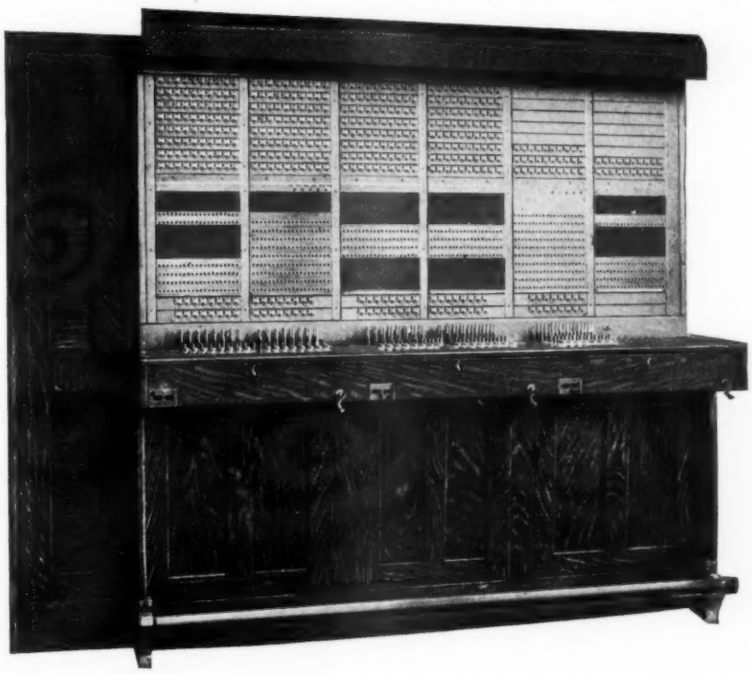
The rectifier is equipped with a relay lock that holds the vibrating unit in a neutral position and prevents the flow of battery current into the machine when the power current is interrupted. Users find this rectifier most reliable and have no reluctance in leaving the equipment on charge day or night.

First Automatic in Japan Installed in Government Office.

Japan is soon to have its first automatic telephone. As has been the case in practically every introduction of modern appliances in Japan, the government is fostering this means of communication, and the first exchange is now being installed in the department of communications in Tokyo.

H. S. Janes, of Shanghai, China, special representative in the Far East for

LEICH MAGNETO MULTIPLE
SWITCHBOARDS
RESTORE LINE SIGNALS FROM ANY JACK



The speed, convenience and accuracy of the Magneto Multiple switchboard is made possible by the electrically restored drop that acts both as signal and relay. It is restored to normal the instant the call is answered from any position.

One operator answers and completes her own call without the necessity of restoring the signal with her hand.

Cord supervision is made by electrically restored drops with pilot lamp. Restored from operator's key.

An operator can answer more calls with less effort than with any plug restoring drop switchboard.

Demonstrated in Rooms 116-117, National Convention

LEICH ELECTRIC CO.
GENOA, ILLINOIS

ELECTRIC APPLIANCE COMPANY
Chicago, Dallas, San Francisco, New Orleans

ST. PAUL ELECTRIC CO.
St. Paul, Minn.

DISTRIBUTORS

POST GLOVER ELECTRIC CO.,
Cincinnati, Ohio

TELEPHONE & ELECTRIC SUPPLY CO.
Spokane, Wash.

B-R ELECTRIC COMPANY
Kansas City, Mo.

the International Automatic Telephone Co., Ltd., of London, England, has charge of the installation, with E. M. Cohen, engineer from the London office, in direct supervision of the work.

While the first automatic exchange will be private, connecting offices in the department of communications, its use will not be limited to the department.

Radio Telephony Range Tests to Be Continued.

Nearly 1,000 reports have been received on the signals transmitted from stations KBKA and WLB. A preliminary analysis of 500 reports on transmissions from the former station has been made, using a sorting and counting machine very kindly loaned by the Bureau of Census.

A report has been prepared by the U. S. Bureau of Standards describing this study entitled, "A Preliminary Statistical Study of the Range of Radio Transmitting Stations." Brief attention has been given to the application of the theory of probability to the results of this transmission test

Plans have been made to continue the test through the assistance of the Department of Agriculture, a representative of that department carrying out his work at Minneapolis as a member of the staff of the Bureau of Standards.

POSITION WANTED

POSITION WANTED—By a first class cable splicer, experienced in aerial and underground construction. Can locate and repair trouble. Have good references. Address 5124, care of TELEPHONY.

WANTED—Charge of Independent company; 14 years' experience from the ground up. Given much technical study, also understand bookkeeping. Prefer Ohio or Indiana. Age 31. Married. Best of references furnished. Address 5123, care of TELEPHONY.

DIAMOND EXPANSION BOLT Co

90 West St. ◇ New York

MANUFACTURERS

Expansion Bolts — Drills
Screw Anchors — Toggle Bolts
Cable Clamps — Bridle Rings
Duct Rods — Guy Clamps

GALVANIZING

PLANT - GARWOOD, N. J.

DISTRIBUTORS

Western Electric Company

INCORPORATED

Hang Your Cables on BONITA *Rings*

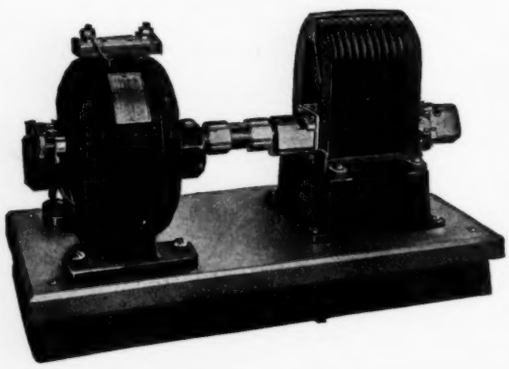
THEN the cable will rest on a broad flat surface that will insure long life to the cable.

CAMERON APPLIANCE CO.

EVERETT, MASS.

Generators vs. Batteries

Is your ringing service **dependable and constant?**



The Holtzer-Cabot Electric Company's Magneto-Ringing Motor-Generator does its work under any and all conditions, without variation. It **never fails.** No battery exhaustion; no renewals; no contact adjustments—**but constant service.**

THE HOLTZER-CABOT ELECTRIC COMPANY

Boston Philadelphia Detroit New York
Chicago Minneapolis Baltimore Cleveland

"INDIANA"

TELEPHONE AND TELEGRAPH WIRE

PROVEN BEST BY TEST

Time and the aid of America's foremost engineers, have enabled us to develop and manufacture the highest grade wire known to the trade. It is greatest in conductivity and lasting qualities, due to the superior quality of material from which it is made, as well as its *Extra Double Galvanizing*, which insures longest life.

STEEL STRAND

Single and Double Galvanized, Standard, Siemens-Martin, High Strength and Extra High Strength Grades.

HANDLED BY MOST JOBBERS

MANUFACTURED BY

INDIANA STEEL & WIRE CO.

MUNCIE, INDIANA